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THE MIDDLETON GOLDSMITH LECTURE.

ON THE RELATION OF THE DISEASES OF THE KIDNEY, ESPECIALLY THE BRIGHT'S DISEASES, TO DISEASES OF THE HEART.

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WHEN, by your kind thought, I was asked to deliver the Middleton Goldsmith lecture before your learned body, several subjects occurred to me which, from their great pathological interest, seemed worthy of the occasion, and which I believe the generous founder of these lectures would have approved of, could his cheery presence be here to animate us. From among these I choose, partly because it has been with me one alike of pathological and clinical investigation, the relation of diseases of the kidney, especially the Bright's diseases, to diseases of the heart. Much has been done of late years to examine this subject; but it is far from being clear or complete, and I must claim your indulgence if, in the endeavor to add a little to our knowledge of it, I allude to some facts which to you must be trite.

We all know that there is a close connection between diseases of the kidneys and diseases of the heart. But how intimate is this connection, and what determines it? Is there anything in an affection of the heart which would lead to a kidney affection? Or is the kidney disorder the starting-point of the undoubted combination observed? Again, are the lesions, when found together, both due to a common cause which determines them, and not the direct consequence of each other?

Allow me to detain you with a brief discussion of these weighty questions, before I call your attention to some of the finer points of pathological research which I shall attempt to demonstrate to you.

One of the first questions to solve is, Whether disease of the heart in itself leads to disease of the kidneys? The general impression is that it often, indeed generally, does. But on analyzing a large number of cases I find that this belief is incorrect. I will here give some of the results of my investigations into the matter, and will take the records of the Pennsylvania Hospital for a period of ten years, extending from the beginning of 1877 to the beginning of 1887, and similar records from the Clinical Department of the Jefferson Medical College for a period from June, 1875, to January 1, 1888, selecting merely the cases of which it was reasonably certain that the cardiac affection was the primary lesion.

At the Pennsylvania Hospital were noted of such cases

of *valvular heart affections*, 76; at the Jefferson Medical College Clinic, of *valvular heart affections*, 51. Of these 127 cases, in all of which the urine was examined, for the most part repeatedly and at different times, and in many of which, especially in the cases at the Pennsylvania Hospital, autopsies are recorded, there were in 92, it is specifically stated, no evidence of any kidney affection, as shown by the absence of casts, of albumen, and, in a number of instances, by the notes of the post-mortem changes. The 76 valvular heart cases at the Pennsylvania Hospital furnished 28 cases in which some concurrent kidney affection was observed; the 50 cases at the Jefferson Medical College Clinic showed but 7. Of these 7, in 1 (Case III. of series), happening in a child with a mitral regurgitation, there had been scarlet fever three years, and an attack of rheumatism two years prior to the record of the case; there was hypertrophy with dilatation in connection with the valvular disease, and chronic parenchymatous nephritis. In another case (Case XIII.), that of a man fifty-two years of age, the mitral lesion, following rheumatism, was associated with urine one-fourth albuminous and of character usual in parenchymatous nephritis. The dropsy began in the abdomen, the swelling there preceding that of the feet and legs for nearly a year. In the third case (Case XXV.), a presystolic mitral murmur was found with hypertrophy of moderate degree, but with considerable dilatation. The heart's action was irregular, the urine was full of albumen, and attacks of cardiac asthma and occasional uræmic convulsions occurred. In the fourth case (Case XX.), a married woman, twenty years of age, there was some abdominal dropsy and a puffy face. The valvular lesion consisted in aortic regurgitation with a slight mitral regurgitation; considerable hypertrophy of the heart existed. The pulse was 128. The urine was free from sugar, of specific gravity 1.018, and contained small amounts of albumen. The kidney was considered to be in a state of parenchymatous inflammation.

Of these four cases, in all of which, probably, the kidneys were in a state of chronic parenchymatous nephritis, the first ought really to be excluded, since the kidney affection much more likely had its origin in scarlet fever, leaving thus only three undoubted cases.

In 3 more of the series albumen is mentioned as occurring in very small quantities. In one (Case XVI.), it was present without tube casts; in another (Case XXXI.), where a mitral presystolic murmur as well as an adherent pericardium existed, a few hyaline tube casts were discerned in a feebly acid urine, free from bile and sugar, but containing a small amount of albumen and crystals of oxalate of lime. In a third, in which mitral regurgitation with considerable hypertrophy and dilatation was noted, albumen in small and varying amounts was detected, but nothing else. In all three instances it was due to congestion of the kidneys, and not an evidence of Bright's disease. We have then but 3 cases in 51 in which a kidney affection really existed.

I will now examine the 28 cases out of the 76 recorded at the Pennsylvania Hospital, in which the urine examinations indicated coexisting disorder of the kidneys. In 16 of the 28 the record speaks specifically of but small amounts or of traces of albumen and of the absence of casts. In one of these (Case I.), the autopsy tells of kidneys showing no marked alteration of structure except that, weighing respectively six and seven ounces, the capsules were thickened, and the right kidney contained two small cysts. The highest amount of albumen recorded in these 16 cases is one-sixth of the test-tube, sometimes one-tenth, and often the merest trace.

In 6 cases (Cases II., XVI., LV., LXIII., LXIX., LXXVI.) tube casts are described in addition to the albumen. They were hyaline or slightly granular casts. In 2 of these 6 cases we have autopsies; and this is a summary of the record. In one (Case LXIII.), the hypertrophied heart weighed thirty-six ounces, there was marked insufficiency from contraction of the aortic leaflets, slight thickening of the mitral; the kidneys were congested, cyanotic, otherwise normal. In the other (Case LXIX.), the heart weighed fifteen ounces, the mitral and aortic valves were both thickened. The kidneys were congested, but not altered in structure.

In 6 cases the clinical record is that of much more serious disease. But one of these (Case LXV.) we must at once exclude, as the albumen, the pus, the epithelium, which existed in connection with the mitral disease were clearly of vesical origin, and any renal implication was most doubtful. Five cases of marked renal affection, with highly albuminous urine, we still have to account for. Of these, in one (Case LXI.) there were also pus cells and bladder epithelium; but distinct renal casts were detected, and the case was looked upon as one of parenchymatous nephritis complicating mitral insufficiency. In two (Cases XLII. and LIV.), the same view was taken of the renal complications, associated in Case XLII. with mitral narrowing; in Case LIV. with both mitral and aortic insufficiency. But in this case, in which highly granular and hyaline casts abounded, and in which the albumen was in bulk two-thirds of the test-tube, the conclusion is vitiated by the patient having been a great drunkard, and all his tissues having been profoundly altered. Case XLVII. is very instructive on account of its clear history. It happened in a man who had rheumatism thirteen years prior to admission into the hospital, but in whom dropsy and puffiness of the face only appeared two months before. The urine contained albumen, granules, and fatty casts. The greatly enlarged heart weighed, with clots, thirty-six ounces, without clots thirty-two ounces. The mitral orifice readily admitted four fingers, so did the tricuspid orifice; the aorta was fully twice as thick as normal, but the aortic valves were competent. The walls of the right auricle were double the natural thickness; the left ventricle, its cavity enlarged about one-half, had walls measuring near the base one inch. The kidneys were engorged, and appeared in the early stages of parenchymatous nephritis. The left kidney, weighing twenty-four ounces, contained a few cysts on the surface, its bloodvessels were prominent, but not thickened. The right kidney was about the same in size and structure.

In Case LXX. we also have an autopsy. The aortic and mitral leaflets were thickened and contracted. The kidneys were large, firm, harder than normal and evi-

dently diseased, but showed no adherent capsules or signs of contraction.

Summing up the whole inquiry, we find in 127 cases of valvular disease of the heart, but 8 in which any true affection of the kidney existed—anything more than mere congestion. And among these eight, there is not one instance of the contracted or cirrhotic kidney. In truth, the kidney disorder that results from a valvular disease of the heart is simply a congested kidney of full size, redder, a little more glistening, and in elderly people, or where the congestion has been of long standing, firmer than normal, showing even slight increase of fibroid texture, and, perhaps, a rather more adherent capsule. Persistent engorgement of the renal veins gives the well-known livid, cyanotic appearance to the somewhat indurated organ. The epithelium of the tubes is swollen, and finally undergoes granular degeneration.

I have, by the analysis of the cases, endeavored to give you a proof how rarely valvular disease of the heart leads to chronic disease of the kidneys, other than congestion. When it does, the form of affection is that of a chronic congestion, which, in its turn, passes into a parenchymatous nephritis. The granular contracted kidney does not, I believe, result from the process of congestion just alluded to; though, as I have already said, occasionally, especially in elderly people, the kidneys from long-standing congestion may appear hard, and exhibit a slight amount of fibroid change. These statements seem at variance with those of one of the most eminent of your members, Dr. Delafield,¹ who, in 137 cases of death from heart disease, reports 27 large white kidneys, 29 atrophied kidneys, and 28 of chronic nephritis which could not be classed as either large white, or atrophied organs. Perhaps the apparent discrepancy is to be explained by the cases being heart disease, of which it was not specifically known whether it preceded the renal affection or followed it.

During life it may be very difficult in individual cases to determine whether we have, as the result of the heart malady, simply a congestive condition of the kidneys, or real Bright's disease; in truth, as in both states dropsy is a prominent symptom, we obtain but little aid from the general symptoms, having to base our opinion largely on an accurate cardiac investigation. It may be thought that the urine would afford us much assistance; but this it does not always do. A good many of my observations in purely cardiac cases, speak of urine of low specific gravity, scanty, containing traces of albumen, and here and there casts. The character of these casts is, for the most part, epithelial and not highly granular, though this, too, must not be taken as an absolute rule. On the whole, the most important diagnostic sign, with reference to the urine, is found in the slight and varying amounts of albumen and in the infrequency of the casts. Moreover, though it has been stated that the urine in even these heart cases with renal complication which is not Bright's disease, may have a low specific gravity—in one of my cases it was only 1.006—as a rule, the specific gravity of the scanty urine is high, ranging from 1.020 to 1.024; in one instance of mitral disease my record speaks of 1.030. Sugar was examined for, but found only once (Case XXII. of the Jefferson Medical

¹ System of Medicine by American authors, vol. iv.

College series); here there was aortic regurgitation. Urates, my notes say, are often abundant, biliary coloring matter is not infrequent.

The character of the pulse, the absence of marked arterial tension, and the precise physical signs of the cardiac disease, give us more valuable diagnostic evidence, taken as a whole, than the state of the urine. We may also lay stress on the want of uræmic symptoms, and avail ourselves of the ophthalmoscope as a means of diagnosis. It has, in fact, happened to me several times to determine, by finding albuminuric retinitis, the true meaning of the renal change and the secondary nature of the valvular affection. In one of these instances, indeed, albumen was at several examinations absent, tube casts were but few, the specific gravity was, as a rule, low; but the whole progress of the case, the uræmic symptoms which arose, the absence of dropsy, showed, irrespective of the eye appearances, that the renal malady was the preponderating and original affection.

Before proceeding it may not be without interest to point out that the most common form of valvular disease, associated with renal disorder of the kinds we have found to exist, is mitral narrowing. In 8 of the cases at the Pennsylvania Hospital it is noted only in 2 that the urine is free from albumen. In the cases in which a real structural affection, a parenchymatous nephritis, is developed, mitral stenosis has a preponderating influence. Next stands—for tricuspid disease is so rare that I have not data sufficient to judge by—mitral regurgitation. In uncomplicated aortic disease albumen and casts are very seldom detected in the urine, so seldom that it is always a question whether a mitral complication is present when kidney engorgement is found.

Pure *hypertrophy* and pure *dilatation*, instances, therefore, of enlargement without valve affection, give us the same form of kidney derangement we have been studying. But with reference to hypertrophy, unless the cavities are at the same time decidedly stretched we do not find albuminous urine. Thus this existed in only 1 out of 10 cases noted at the Jefferson Clinic. In pure dilatation, urine albuminous in traces, indicative of congestion of the kidney, is more common. Still, it does not exist in the majority of cases; and I have known it not to appear until the last week of life, even though that life had been a burden for months, owing to the enormous dropsical swelling and the turgid lungs.

We have been studying diseases of the heart and the kind of kidney affections they induce, selecting for analysis cases where, from the history, or the post-mortem results, or from both, the record of the antecedent malady was clear. We now turn to diseases of the kidney and their combination with diseases of the heart. It is well known that this combination is a frequent one. We find diseases of the kidney associated with valvular disease of the heart; with hypertrophy; with dilatation; and with pericardial affections. In studying the subject I mean to draw conclusions only from instances in which from the history, as well as from the concomitant features of the case, we may fairly judge that the kidneys were the first or at least simultaneously diseased.

Let us examine the *valvular diseases of the heart* as they are found associated with affections of the kidney. I find, looking at the records of the Pennsylvania Hospital for ten years, from the beginning of 1877 to the beginning of 1887, that in 101 cases of renal disease in

which the state of the heart is particularly mentioned, 41 cases have a concurrent valvular heart affection, and in 60 there is no such lesion. Of the total 101 cases, 57 are acute Bright's disease, and 44 chronic. Of the 41 renal cases with valvular lesion of the heart, 29 are Bright's cases of the chronic type and 12 are of the acute type. Of the 29 cases of chronic Bright's disease with associated valvular heart lesion, it is noticed that 13 have a preceding history of rheumatism. In 5 there is a positive statement of no preceding rheumatic history. In the other 11 cases, nothing is remarked about rheumatism.

Of the 12 acute cases with concurrent valvular lesion, 3 cases have the record that rheumatism did not precede. In the other 9 cases nothing is said with reference to a rheumatic history.

Out of 29 cases of chronic Bright's disease with valvular disease, the age of the youngest was thirty-three years; 14 of the 29 were beyond the age of forty-five years; the oldest was sixty-five years of age.

Of the 44 chronic renal cases, 8 were examples of the large white kidney. The ages of these 8 were from forty-eight to sixty years. 1 case had double mitral and aortic murmurs, and was preceded by several attacks of acute rheumatism. Of the other 7, nothing is stated about either the heart or a rheumatic history.

Of the 57 acute renal cases, in none are mentioned signs of cardiac hypertrophy without a valvular affection, nor, indeed, do the notes show that even with this complication was the heart enlarged.

In the notes of the Clinic of the Jefferson Medical College, in 21 acute cases of Bright's disease, 20 of which had marked dropsical symptoms, the heart was found to be normal in all but 4, 2 of which had had a previous history of acute rheumatism. In these 4 cases there were evidences of valvular disease without hypertrophy.

From an analysis of these observations, it becomes evident that the character of the kidney affection, in combination with the valvular lesion in the heart, is in the vast majority of instances the contracted kidney. Next stands acute Bright's disease, where also we find valvular affections, but here without the hypertrophy so common in the first group. In the acute, the strong influence rheumatism exerts is very evident; nor is that influence lost in the chronic, where an unusually large proportion are associated with rheumatism, too large a proportion for us to assume that it is a mere coincidence.

Let us inquire what the state of the valve lesion is. It is chiefly an affection of the mitral valve, consisting in a thickening of the mitral, with here and there rough deposits. Next in frequency, but with similar pathological changes, we observe a lesion of the aortic valves, occasioning either aortic narrowing or aortic regurgitation. A further cause of the valve affection is seen in some of these cases to be due, I believe, to the hypertrophy of the heart forming part of the Bright's disease preceding some general thickening of the valve, though even this may be wanting. A stretching of the valve subsequently takes place, but insufficient to close the orifice in the enlarging heart. Thus the hypertrophy and the dilated condition of the cavities give rise to the valvular imperfection rather than this to the enlargement of the heart. It is in this way that I explain some very striking and interesting cases of hypertrophy occurring in advance of the valvular lesion, which I have observed, and in

which the autopsies showed simply this imperfect closure of the orifice with a slightly thickened mitral valve, and at times with shortened and more rigid papillary muscles.

I have known, but far less often, a similar state at the aortic orifice. The aortic disease that existed was due to the stretching of the valve, which, having reached a certain point, could go no further. This stretching, with the simultaneous thickening, produced an opening through which the blood flowed back. It is thus that we may have a valvular disease following hypertrophy with dilatation, rather as the result of this process, than the hypertrophy and dilatation the result of it. If you ask me whether this is a common cause of valvular lesion in Bright's disease, I say it is distinctly not; it is very much less common than marked valvular thickening with degenerative change.

You see, then, that the valvular disease of the heart which occurs in diseases of the kidney, may be of varying origin; chronic thickening, deposits, degenerative changes, coexisting rheumatic alterations, which have led to these changes, and, lastly, mere hypertrophy and dilatation, which, associated, perhaps, with slight valve thickening, or with rigid papillary muscles, in its turn leads to valvular imperfection. Omitting the last-named group, the ordinary valvular affections in the Bright's diseases, are the result of the altered tissue nutrition of the valves and the degenerative changes which take place there, as they take place in both the large and small vessels of the body. They are favored to a greater or less degree by the morbid products, which, from want of proper elimination on the part of the kidneys, circulate in the blood. It may also be a question whether, in part at least, the altered nutrition of the valve may not be due to affection of their nervous supply. The changes, the degenerative ones certainly, are favored by age. Yet we cannot assume that age is the important factor it appears at first sight; for the acute Bright's affections show also, as has been proved, a strong tendency to the implication of the valvular apparatus, and the acute affections are much more common in the young, or, at least, in younger people, than are the chronic affections. Let me further notice, once more, a point brought out in the analysis of the cases submitted to you, namely, the frequent existence of rheumatism. This may well produce the valve injuries at the same time that it leads to other changes in the body; and thus be a general cause, both for the valvular affection and for the disease of the kidney and of other textures.

Before ceasing to examine this aspect of the subject, I will call your attention to some purely clinical facts which must make us receive with caution many of the statements of coexisting valvular disease of the heart and of Bright's disease. It is often recorded that there was present a soft murmur, variously heard; in some instances at the apex, in others at the right base. Now these murmurs in Bright's disease are not the result of valvular affection. They come from the state of the blood; or they are simply murmurs from temporary perversion of valve action, what we might call functional murmurs. They are inconstant, they are soft, and they are not signs of valvular disease of the heart. You will easily see that the error is all the more readily committed because we have hypertrophy, with or without dilatation, as such a common attendant upon Bright's malady. Thus, the mere hearing of a murmur in the

heart is not a sign of valve affection in Bright's disease, not even when there is coexisting hypertrophy. We have to take into account its persistence, its character, generally rough, the state of the second sound of the heart, and the fact that it may be heard in the axilla, and posteriorly near the angle of the scapula, to make clear that it is of organic type, and not of the temporary character just referred to. Bearing this in mind, we shall have to reject a great many of the cases of so-called valvular disease of the heart often loosely reported, in which the only evidence of the valvular affection is based upon a murmur, the particular character of which is not stated; or its softness or temporary nature is alluded to, but an erroneous conclusion is drawn from its existence.

The difficulty does not exist with reference to diastolic murmurs, which, in my experience, are always organic. But it is not lessened by a study of the pulse, which is in itself altered by the arterial lesions of the Bright's malady and by the thickened left ventricle; nor can we place, for similar reasons, much dependence on sphygmographic tracings.

I think, then, that the number of cases of valvular disease of the heart, existing as a complication of Bright's disease, is more often over-stated than under-stated. Indeed, with the greatest care, unless the case have been for a long time under observation, it may be almost impossible to detect the true relation between the maladies. Much of the difficulty will be, however, solved, if we accustom ourselves to look upon them as not dependant upon each other, but due to a common cause, working almost simultaneously, or even at different periods, mischief in kidney, heart, and other textures. To the frequent starting of this common cause in rheumatism, attention has been called.

Let us pass to an examination of the *hypertrophy of the heart* which exists in combination with Bright's disease of the kidneys; I mean where the hypertrophy, with or without some dilatation, is a pure process, and not complicated with valvular disease. With reference to the acute cases of Bright's disease, I have already mentioned that we do not find hypertrophy. In the 22 cases of this character at the Jefferson Clinic, and in the 57 cases at the Pennsylvania Hospital, therefore in 79 cases, in most of which there was marked dropsy, in not one were the signs those of hypertrophy, not even in the instances with valvular lesion. A few doubtful exceptions are observed in the notes where strength of impulse is mentioned; but in these it is probable that the valvular affection which coexisted had its origin in a previous attack of rheumatism.

Thus then we may assume as positive that hypertrophy of the heart does not occur in acute Bright's disease. This is vastly different in the chronic form of the malady. Here, as is well known, hypertrophy is the rule. This subject is a matter of such common observation that it scarcely needs reinforcement by figures; but I will quote, since they are based solely upon post-mortem records on a most extensive scale, the recent researches of Goodheart in *Guy's Hospital Reports* for 1886.

In the ten years from 1873 to 1882 inclusive, there were autopsies of 344 cases of granular kidney, and of 196 of chronic parenchymatous nephritis. The weight of the heart in the cases in which the kidneys were described as granular, was in only 103 under 12 ounces, which was, therefore, within the limits of average weight. In

226 it was above this weight. Making allowance for all possible exceptions, as old age and wasting disease, and adding 36 which were hypertrophied hearts, though of average weight, there are 262 cases of marked hypertrophy in 329 undoubtedly granular kidneys.

After making all deductions for the cases of chronic parenchymatous nephritis, there were in 25 only a heart of average weight; in 119 there was hypertrophy of the left ventricle, a proportion of over 1 to 4. In lardaceous disease of the kidney, hypertrophic changes in the heart and arteries were not observed, which agrees well with the general observation on the subject.

Dilatation of the heart becomes associated in a more or less marked degree with the growing muscle. It affects preëminently the left side of the heart. In Goodhart's paper, just quoted, I find 51 cases of notable dilatation of the left ventricle associated with hypertrophy in the 344 cases of granular kidney, and 33 cases in the 196 cases of chronic parenchymatous nephritis. It would, therefore, appear that the dilatation predominates in chronic parenchymatous nephritis; while pure hypertrophy does so in granular kidney.

In cases of hypertrophy such as I have described, the heart attains very great size; the muscles are firm; for the most part it is a pure hypertrophy, only here and there there takes place some increase of the fibrous texture as well as of the muscular. The muscular fibres are a little more opaque, and sometimes more granular than normal. As the disease advances, secondary degeneration, granular and fatty, may occur; but they do not happen unless there be decided coexisting disease of the vessels.

The state of the vessels in these instances of hypertrophy is very interesting to note. They show the same condition which has been found in the kidneys, in the brain, in the spinal marrow, in the lungs, and in many other parts of the body.

The inner coat is thickened, the muscular coat hypertrophied, the outer coat in a state of fibroid change, and the whole lumen of the vessel greatly lessened by these encroaching lesions. This lessening of the calibre is the same, as are the changes the same, that we find in the renal vessels, and it may take place to a very great degree. My colleague at the Pennsylvania Hospital, Dr. Arthur V. Meigs, has recently shown me a section of a heart obtained from a man under his care who died of granular kidney, with aortic valve disease, and left ventricle from three-fourths of an inch to an inch thick, exhibiting besides increased muscle beginning interstitial change. Microscopically examined, the first ascending branch of the left coronary artery was so much thickened, chiefly by the increase of the intima, that the lumen of the vessel was a mere chink, the thickening being irregular, about four times more on one side than the other.

You will readily see how such a state of things might lead to secondary degeneration by cutting off the blood supply from the hypertrophied muscle; and it is most likely that these degenerations which we have in the hypertrophied hearts of Bright's disease, which, however, I believe are not the rule, come on as an after-result of the altered vascular supply.

As a few minutes ago, I called your attention to some points of diagnosis with reference to valvular disease in Bright's affection, I may now call your attention to some points with reference to hypertrophy. It is not always easy to make this out clinically. We have to consider

not only the size of the percussion dulness, but the extent of the impulse as well as its force and position; the lowered apex beat, which is often felt on a line with or beyond the nipple; and the heavy character of the first sound. Nor must we fail to take into account the character of the second sound, its accentuation at the base, which commonly happens in these hypertrophies in connection with renal change. Strong, extended impulse, displaced apex, altered sounds, and increased percussion dulness are the phenomena by which we judge; but not by any one of these alone, certainly not by the impulse, which may be temporarily increased by other causes than cardiac hypertrophy. On the whole, I lay most stress on the altered character of the sounds of the heart, both at the apex and the base, and the changed position of the impulse.

The enlargement of the heart which takes place in Bright's disease of the kidney may be made use of in prognosis. We are often greatly at a loss to form an opinion as to the probable length of the case and to the way in which it is progressing. Up to a certain point, the occurrence of dropsy and of eye changes will assist us, as well as the evidences of marked arterial tension. But dropsy, while common in chronic parenchymatous nephritis, is very generally absent, or but slight in cirrhotic kidney. The urinary examination does not always afford us much light, for some of the worst cases are those in which—I allude especially to the cirrhotic kidney—the amount of albumen is small, or often temporarily absent, and in which the tube-casts are few; nor can we lay too much stress on the character of these casts. It is under these circumstances that I think the heart condition becomes an especially valuable means of prognosis. Where the heart is but slightly affected, there will be reason to believe that the case will continue for some time, provided we do not observe signs of uræmic poisoning. Where, on the other hand, the hypertrophy is marked, there is ground for the fear that the disease is more general, is advancing, and that the case will not belong to those long cases of the affection which we sometimes encounter. Thus the study of the heart may be made use of as a means of estimating the amount of general change and the likelihood of shorter or longer life.

Let me reiterate the view that, according to my experience, the hypertrophy in the majority of instances is a pure hypertrophy, unconnected with degenerative changes. It is certainly so in the earlier stages of the affection. In instances of long-standing disease and in elderly people, these degenerative changes may be found in the progress of the case; but my observations do not at all agree with those of Buhl, who has stated that fibrous and chronic interstitial myocarditis is very frequently found in connection with the hypertrophy. To its occasional occurrence, I have already alluded.

Dilatation of the heart, unconnected with hypertrophy, or at least predominating over the increase of the muscular walls, is extremely rare. When it happens, it is the latter kind of cases, namely, beginning as hypertrophy, but the rate of increase of the muscular structure not remaining in proportion to the dilatation of the cavities that is met with. Among the cases at the Jefferson Clinic, I have collected some instances of what might be fairly called dilatation unaccompanied by hypertrophy, or attended only by a slight degree of hypertrophy; and

I have seen a small number in private practice. Goodhart points out that in the young the risk of dilatation of the heart is much greater than in older persons.

Another lesion of the heart which we observe in connection with Bright's disease, both acute and chronic, is *pericarditis*. But inflammation of the outer membrane of the heart forms only part of that general tendency to serous inflammation which we find in Bright's disease. It is probably due to the contaminated state of the blood, and neither its occurrence nor its explanation need here detain us.

Of all the heart affections passed in review, hypertrophy is the most common. Let us look at its cause. I leave out of consideration those cases where clearly existing valvular disease may have led to the hypertrophy; though even here it is always questionable whether some of the increased growth be not due to other causes than the valvular affection, and may not have preceded it. I will take the pure instances of hypertrophy and ask, How are we to explain them? It will serve our purpose best if, in considering this much mooted and most intricate subject, we give a short summary of the different views held as to the cause of the hypertrophy, rather than attempt an historical review of how and by whom these views have been brought forward.

One of the main views entertained is, that the hypertrophy of the heart is due to the blood contaminated by renal excrementitious matter, exerting a stimulating effect upon the action of the heart, thus leading to hypertrophy of the ventricle; and, further, that the impure blood requires greater force of ventricular contraction to propel it through the unwilling vessels. This view has the great authority of Bright, and is to this day advocated by some eminent teachers.

A second view, while taking note of the influence of the impure blood, holds that the altered blood tension produced by the disease of the kidney, and the difficulty of the blood circulating through it, give rise not only to the well-known feature of heightened arterial tension, but to increased size of the heart to overcome the resistance of the renal organs. This is largely the view of Traube and some of the German investigators, and has been recently reaffirmed by Cornil.¹

A third view is that the left ventricle beats with augmented force because the arterioles refuse to receive the altered blood, and in consequence of the resistance these vessels hypertrophy, especially in the arterial coat. To overcome this muscular resistance, the heart has to act with greater force, and its muscles increase. This is, in the main, the view of George Johnson, and is largely based on that change in the muscular coat of the arteries which he has so well described.

A fourth view is that a fibroid degeneration, a fibroid overgrowth of the outer coats of the arteries, takes place over a large portion of the vascular system. In consequence of this, the heart has to struggle to overcome the resistance of the permanently narrowed vessels, narrowed by these hyaline, fibroid changes; and the enhanced blood-pressure shows not only in the raised arterial tension but the increased resistance leads also to cardiac hypertrophy. This is mainly the view of arterio-capillary changes, of a vascular fibrosis as the cause of hypertrophy

of the heart, which has been strongly and ably advocated by Gull and Sutton.

The last two views have much in common, at least as regards the production of the hypertrophy in consequence of the altered condition of the vessels.

I will mention a fifth view, which for the present I shall simply indicate, namely, that the hypertrophy, as well as to a great extent the vascular changes, are the result of a common process which takes its origin in the ganglionic nervous system. This is the view which in its main features flows out of some researches made by Dr. Longstreth and myself, and which here I simply state, intending presently to call your attention to the particular facts bearing on it.

Now, analyzing these different views, let us first take notice of the assumed influence of impure blood, and it is for practical purposes possible at the same time to examine into the supposed alteration of the blood-pressure due to the resisting kidneys. These views which I thus group together seem to me untenable. If true, why should we not have hypertrophy of the heart, and especially the form of hypertrophy far the most common, of the left ventricle, in other diseases of the kidneys than Bright's disease? Why should not, too, in the acute form of this malady, the heart be increased? It might be objected to this argument that, in the acute affection, the disease does not last long enough to produce muscular increase; but the objection will not hold good with reference to the other diseases of the kidney, in which serious, we might even say destructive kidney lesions take place, in which uræmic symptoms happen, yet in which there is no cardiac hypertrophy. I will take the instances, a number of which have come under my observation, of persons dying from extensive cystic degeneration of the kidneys in whom the heart was found absolutely normal.

Here is one. In a gentleman whom I attended with a very large tumor in the abdomen, and who passed bloody and albuminous urine, there were for three weeks before death most marked uræmic symptoms. At the autopsy both kidneys were enormously enlarged, measured each about fourteen inches in length, were filled with cysts, and no trace of renal structure could be detected. It was, indeed, difficult to understand how life could have lasted so long with such extreme disorganization; yet the heart was absolutely healthy.

In a second case, the kidneys measured six inches in length, nearly four in width, and three and a half in thickness. The tissue was almost wholly converted into cysts, from the size of an egg to that of a pin's head. There was no disease of the heart. This specimen is now in the Museum of the Pennsylvania Hospital.

In a third case the two kidneys were greatly enlarged, irregular in outline, the capsule was roughened by shreds of inflammatory adhesions; the organs, measuring each about seven inches in length and four in width, were filled with cysts. The thoracic viscera were in an absolutely normal condition. The liver was found to be highly fatty. The kidneys are also in the Museum of the Pennsylvania Hospital.

I shall cite two more cases, partly to sustain my view, and partly on account of the evident uræmia which preceded death. A man, under forty years of age, by profession a gambler, was admitted into the Pennsylvania Hospital in a comatose condition. He had been struck

¹ Comptes-Rendus du Congrès International, tome I., Copenhagen, 1886.

at by a companion, while drinking in a saloon, but was not hit. Immediately afterward, to the astonishment of those around him, he fell to the ground unconscious, and remained in this condition until death, a day or two later. No history of his previous state of health was obtainable, further than that he had seemed well, and was nightly occupied at his business as a dealer in gambling games. The urine was found to contain some albumen, and a large amount of sediment, mostly of a cellular character. Death occurred in the hospital with all the signs of marked uræmia. The urinary secretion was extremely scanty, and the unconsciousness profound.

The circumstances connected with the death led to the arrest of the companion who aimed the blow; but the investigation of the coroner showed that death was due to natural causes, and not to violence. At the autopsy, the kidneys were found to be in an advanced state of cystic degeneration. They were greatly enlarged in all directions, and the tissue was almost entirely converted into cysts. The disease had evidently been of long duration. The lungs were normal, so was the heart.

Yet another case. A young servant woman, who had been in good health so far as known, fell on the floor while engaged at the wash-tub, and was found lying in an unconscious condition. She partly regained consciousness, but, on her admission into the hospital, could give no satisfactory history. She died a few days later in a comatose state, with every evidence of uræmia. The kidneys showed advanced cystic degeneration. The heart was normal, and no lesions were presented in the other organs, save congestion of the lungs.

I have thus presented to you five cases leading to death with the most advanced cystic degeneration of the kidneys existing, with the blood evidently impure, and, finally, occasioning, in the majority, marked uræmic symptoms, yet with actually normal condition of the heart.

I might go further in this line of argument, and call your attention to the enormous kidneys with calculi imbedded in them, kidneys which produce abdominal tumors large enough to be mistaken for gastric and omental cancers, also leading to death, and in which no disease of the heart was found; so, too, in instances of cancer of the organ; though, in this condition certainly, and even in cystic degeneration at times, the argument is somewhat vitiated by the fact that, while one kidney undergoes extreme change and disorganization, the other may remain normal, or, at least, be still capable of performing its function fairly well.

The next views, those of arterial changes, whether in the muscular coat producing muscular hypertrophy, or from fibroid growth in the outer coats, I shall not discuss, further than to say that I believe the anatomical researches on which they are founded to be correct, having often seen the conditions referred to. Nor is it necessary to go into the question which is the most common of these changes; for I think that both may be found in different cases, and even in the same case at different stages. While thus concurring in the correctness of these observations, I will point out how insufficient they are to interpret the cardiac hypertrophy; how impossible it is to prove that blood is resisted by the altered vessels on account of its character; how difficult it is to explain the enlarged heart simply as the result of vascular changes, when we have striking alterations in the vessels, both large and small, in old age, and

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from syphilis, and in and beyond aneurisms, where we do not find cardiac hypertrophy happening as rapidly, or to anything like the extent that it does in Bright's disease, if, indeed, it happen at all.

Let me now, before taking up the fifth view, which I told you had grown out of observations by Dr. Longstreth and myself on the nervous ganglia, call your attention briefly to these observations, and supplement them by some which have not hitherto been published. Let me add, and here acknowledge, that in the researches about to be brought forward, which were most difficult and laborious to carry out, it is to the care and attention of Dr. Longstreth that they owe their merit, rather than to anything I have myself been able to do. Let me also recall that in the investigations we made on Bright's disease¹ we found marked changes in the renal ganglia, of a character showing increased fibrous tissue and atrophy of the ganglion cells. These were associated with decided alterations in the renal vessels, as exhibited to you in these micro-photographs, which will make the matter clearer to you than I can from description. This condition in the renal ganglia has been confirmed by Saundby,² who, however he differs with our conclusions, has seen exactly the same pathological lesions.

I shall proceed to present to you the statement based upon eleven cases accurately observed, in which the cervical ganglia from which the cardiac nerves arise were minutely examined; and five of these cases, which tell the tale of all, I will give you in some detail. The records relate particularly to the inferior cervical ganglia, giving off mainly the inferior cardiac nerve. All of the cases were interstitial nephritis; 9 were chronic contracting kidneys, and 2 contracting kidneys of more acute form.

CASE I.—Emma H., æt. sixty-five, admitted into the Pennsylvania Hospital May 18, 1885; died May 18, 1885; admitted for cerebral hemorrhage; had vomited; was unconscious, and completely relaxed or paralyzed; had a few irregular convulsive movements; two quarts of highly albuminous urine were drawn by catheter; she died in three hours. Post-mortem examination showed an extravasation of blood in the external part of the left hemisphere, but it had not extended to the ventricles. Death resulted in this case apparently from uræmia, rather than from the cerebral clot directly. The kidneys were very much reduced in size, with thickened capsules and granular surfaces, dotted with small cysts. The left ventricular wall was much thickened, measuring over one inch. The minute structures of the inferior cervical ganglion showed many marked changes; the ganglion cells were deeply pigmented, appeared shrivelled or compressed; equally to be noticed was the tissue around the ganglion cells, composed of a delicate fibrillar tissue in which appeared very numerous round and spindle nuclei. Some of these nuclei were doubtless those of the nerve structures, but the majority were a new growth of connective and fibrillar elements; in places they were so numerous as to obscure the ganglion cells. In the greater part the vesicular nucleus of the ganglion cells could be seen, but the nucleus was generally visible faintly stained with carmine. A very striking feature was the appearance of the vascular structures; in the first place, the capillaries seemed in some parts to pervade nearly the whole area, some with a narrow calibre carrying but a single red blood corpuscle, and from this width upward to those with six corpuscles abreast, and many of these vascular tubes presented ampullar dilatations; some of

¹ American Journal of the Medical Sciences, July, 1880.

² British Medical Journal, Jan. 13, 1883.

this condition can be accounted for by the mode of death, but the most was due to permanent changes. The walls of the arterioles showed the thickening so often found and described in the arterial walls in these cases of renal disease.

CASE II.—Hannah G., æt. seventy, admitted September 4, 1884. No. 920. Died November 13, 1884. Had been gradually failing in health, and lately had chest symptoms and cedema; the secretion of urine had slowly diminished. On admission there was orthopnoea, the lungs were full of coarse râles, and were emphysematous, rendering any accurate determination of the size and condition of the heart impossible. The apex of the heart was far to the left of the normal. There was ascites and also diarrhoea.

The heart showed hypertrophy of the left ventricle, its tissue was undergoing fatty changes and atrophy; the kidneys although much altered did not exhibit the marked changes of the other cases. The minute structure of the inferior cervical ganglion cells indicated atrophic conditions; the cells were pale with less than the normal amount of pigment (as usually seen in the ganglia of adults dying of disease), the nucleus was plainly visible, but the nucleolus stained with carmine very faintly. Between the ganglion cells the tissue was of firmer character than normal, and appeared to encircle these cells with stiff fibres. There were no round nuclei, but only flattened spindles in this space. The capillaries were not conspicuous, but the walls of the arterioles were altered, though to a less marked degree.

CASE III.—Mary McG., æt. fifty-two, admitted Nov. 3, 1884. No. 1288. Died Jan. 30, 1885. Her history tells of a severe cold followed by swelling of the legs; urine of dark color and much reduced in amount; later, nausea and vomiting. On admission, the urine was smoky and contained fifty per cent. of albumen; the microscope showed blood-, hyaline-, and granular-casts, and also some epithelial casts. Only twelve ounces of urine were passed in twenty-four hours. Dyspnoea and diarrhoea existed. Later came uræmic convulsions and strongly urinous odor of the breath and body. Post-mortem examination: Heart weighed sixteen ounces; right distended, left contracted and much hypertrophied. Liver small, pale, and granular. Kidneys reduced in size, firm, capsule adherent and the surface granular. The case was an acute attack of nephritis in a contracting kidney.

The microscopic examination of sections of the kidney of this case was very interesting, showing the majority of the Malpighian bodies converted into firm fibrous nodules, and only in a few places were the convoluted tubes to be seen. Here and there a Malpighian body presented somewhat of a normal aspect, with a few tubes around it in which the epithelium could be distinguished. The chief feature was the fresh outpouring of small indifferent cells, as seen in acute interstitial nephritis. The ganglion cells were in an advanced state of degeneration, full of granules, shrivelled, and the nucleus and nucleolus scarcely to be distinguished. Between these cells the tissue presented a fibrous aspect.

CASE IV.—Rose B., æt. thirty-seven, admitted Dec. 13, 1884. No. 1517. Died Jan. 12, 1885. The attack followed gradually after pregnancy, with greatly diminished urine secretion—one-half teacupful in twenty-four hours. Diarrhoea and swelling of abdomen were noted. The lungs were full of râles, and the pleural cavities contained effusion. The heart action was rapid, the pulse "corded," the artery hard. The urine was albuminous and contained granular casts. Post-mortem examination: Pleural and abdominal effusions; old pericarditis; hypertrophy of the left ventricle, the wall measuring one and a half inches; liver showed cicatrices, possibly syphilitic; kidneys very small, the capsule thickened, the surface highly granular, the cortex had almost disappeared, while the cones were much distorted.

The inferior cervical ganglion presented even more highly altered conditions than in the previous case. In not a few instances the cells seemed to have nearly vanished, or a few grains of pigment evidenced their site. Other cells while showing some pigment looked blurred, shrivelled, and irregular in outline. The nucleus was misshapen, and the nucleolus was like a fragment of poorly stained matter pushed over to one side of the nucleus and attached to its wall. Around the cells the fibrous tissue formed circles, closely resembling the thickening of Bowman's capsules in a contracting kidney. Even the spindle nuclei in the tissue between the cells had lost their distinctness, and the fibres looked less firm and rigid, but coarser.

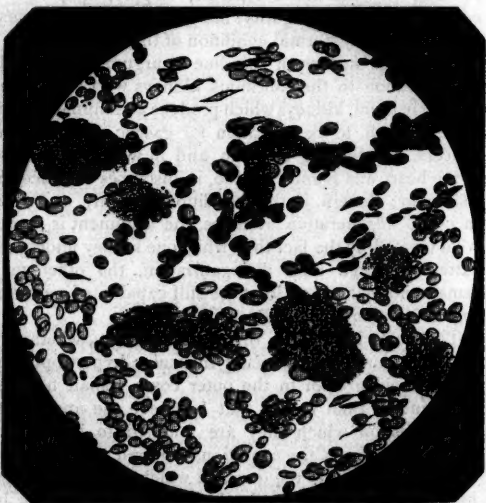
CASE V.—Mary H., æt. thirty-four. Admitted January 4, 1885. No. 1647. Died January 8, 1885.

For four months had had cedema, and for two days orthopnoea. The urine contained one-sixth albumen, and hyaline and granular casts. Death was sudden. Post-mortem examination showed old pericardial thickenings; weight twenty ounces, the left ventricle measured one and one-half inches. The kidneys weighed each one and one-half ounces, capsule thickened, and tightly adherent, the surface was very granular. On section, the cortex had almost disappeared, and the pyramids were much distorted.

This specimen was less well prepared for examination than the others, owing to the delay in obtaining the autopsy; but, however much the ganglion cells changed through the delay, this factor cannot account for the alterations of the tissue of the cardiac ganglion. The general conditions were the same very nearly as in the previous specimen.

I will not present to you any more details of cases, but will rather exhibit to you some microscopical drawings, taken directly from sections. Fig. 1 shows the ganglion

FIG. 1.



cells treated with the ordinary carmine staining, highly granular and pigmented; their outlines indistinct; the nucleated nucleus scarcely visible. The texture between the ganglion cells is crowded with small, rounded or spindle-shaped nuclei. These nuclei are specially numerous around and overlying the ganglion cells. The specimen is from a case in a moderately advanced stage of degeneration. Fig. 2 shows the lesion in a later stage. The whole tissue is firm and hard looking. The gang-

lion cells are surrounded by rings of coarse fibres, in which are a few remaining spindle nuclei. The ganglion cell itself has greatly shrivelled; the nucleus is pressed to one side, the nucleolus showing indistinctly. In some places the ganglion cells have wholly disappeared.

FIG. 2.



These, then, are the pathological minute lesions in Bright's disease in the ganglia regulating the heart movements. Before entering into the question of the bearing of the abnormal appearances, it may be well to answer the question, How does death come in the hypertrophied heart of Bright's disease? It comes with contraction of the left ventricle and dilatation of the right; in other words, it is a death of apnoea rather than one of asthenia. The diseased ganglia do not produce paralysis of the heart. As an instance of how even acute destruction of the ganglia will cause death, similar as regards the heart to that in Bright's disease, I cite the following case of injury and of hemorrhage into the cervical ganglia, the autopsy of which was most carefully made by Dr. Longstreth.

Thomas McC., aged fifty. Admitted into the Pennsylvania Hospital, February 1, 1882.

The patient fell on shipboard, fractured the third, fourth, and fifth cervical vertebrae, and became immediately paralyzed, both as to motion and sensation from the level of the second rib and deltoids downward; breathing was diaphragmatic; the pupils were contracted. There was priapism and retention of urine; the heart's action was frequent and feeble. Post-mortem examination showed large clots pressing on the cervical ganglia; at the third vertebra the cord was compressed and softened. The lungs were congested; the right heart was distended, the left ventricle firmly contracted. The microscopic examination of the ganglia, especially the inferior cervical ganglion, exhibited in many places the presence of extravasated blood around the ganglion cells; some of these cells showed already changes, especially pigmentation, although but a few hours had elapsed between the accident and death; in other respects the cells and tissue of the ganglion appeared normal. The kidneys were normal.

But to return to the examination of hypertrophy of the heart in Bright's disease. I have, I trust, made clear to

you that there exist associated with the enlarged heart, marked changes in the ganglia of the sympathetic nerve from which the cardiac nerves are derived. Is it going too far to assume that these changes are an integral part of the disease; that they may determine the hypertrophy? How, I cannot explain to you exactly. It would not be difficult to bring forward a theory of loss of controlling influence on the heart, produced by the altered condition of the nervous apparatus; but our knowledge of the physiology of the nerve supply of the heart is not accurate enough to admit of absolute reasoning from cause to effect. Still, that disturbed nerve power produces changes in structure by affecting its nutrition, we know in every tissue of the body. Why should not the same be true for the heart? Again, if we adopt this view of the derangement of nerve condition and of the vasomotor influence being the starting-point, we can readily explain the well-known lesions in the vessels, both large and small. Indeed, when we look at the wide-spread changes which occur in them in Bright's disease, especially in its chronic form; when we see everywhere accumulating the evidence that these changes happen in all the vessels of the body, in those of the spinal cord, the brain, the lungs, the liver, in veins as well as arteries—we are driven to the conclusion that there must be some general cause at work which determines so great, so universal an alteration. That general cause, from the nature of things, can only be in the blood, in the vascular system itself, or come from the nervous offices which give life to the vascular system. The change is too extensive to be a mere self-determined local growth of the coats of the vessels. We cannot, indeed, ignore the agency of the waste-laden blood in its full development. But what starts the change? What is the cause of the degeneration? Is it not fair to look beside the blood, to a cause so predominant as the nervous influence, which is everywhere?

I would thus locate as most likely the original starting-point of the alteration, alike of the vessels and of the heart muscle, in the nervous ganglia and in the parts of the nervous system controlling the nutrition of these textures. What the ultimate cause of the lesion is cannot be stated, nor need we assume that one cause alone will determine it. It may be gout, it may be lithæmia, it may be rheumatism, it may be alcohol, it may be lead, it may be purely perverted nervous function from worry, from strain, from anxiety. Any one of these causes may start that alteration in the ganglionic nervous system which leads to degeneration and to the formation of increased fibrous tissue and subsequent atrophy; and with it also to derangement in the heart and in the vascular textures supplied by the affected ganglia and nerve filaments.

These are, of course, not matters that can be at once proved or adopted. You must take them as lines of thought which have come naturally from the investigations pursued, and which promise as rich a return as any that we have had from following out views hitherto brought forward. Whether the suggestions based on these researches prove to be correct or not, I think that the observations themselves furnish one more proof of the general character of what we call Bright's disease, especially in the cirrhotic form. They show us that the primary changes are to be looked for away from the kidneys, not in them, and that there is a general disease, based on a general widespread cause, underlying the vascular alteration, heart hypertrophy, and kidney disease.

But to return from these reflections to the state of the heart in Bright's disease. Looking now at the result of all the observations and the process of reasoning by which I have endeavored to collate them; looking at the general pathological facts which have been cited, I draw this conclusion: that the cardiac hypertrophy which is found in Bright's disease is not in any sense the consequence of that disease. It is an integral part of the same general morbid process, of which the kidney lesion is only the most obvious expression. You may believe, with me, that it is in the nervous system that we are to search for the ultimate, or, it may be more correct to say, the original source of the malady. You may hold that this is not proven, that the changes there are only part of the general texture alteration, and are not the first; that they are result, not cause. But I trust you will see how disseminated an alteration they indicate; how everything points to a general rather than to a local malady; and not think me too venturesome in stating that chronic Bright's disease ought not to be looked upon as an affection of the kidney at all, though it is there that, to the naked eye, its most pronounced lesions occur. In adopting this conclusion, the cases that die of apoplexy from disease of the vessels of the brain before the kidney disease shows any signs; the cases with general vascular tension in which there is as yet no albumen or other signs of renal malady; the cases with marked, the cases without as marked, cardiac lesion receive their ready explanation. They cease to be objects of wonder; the mischief wrought by the general malady has been wrought more elsewhere than in the kidneys. It may exist to a greater, it may exist to a less degree in any structure; it may be diversified in a very varying degree; and be present in parts in very alterable proportions.

These conclusions I draw more particularly from a study of the pathology of the contracted kidney. Perhaps it would be better to limit them to this condition, and to call this general malady Bright's disease of the kidney only so long until some one with a genius for names gives it one we can all adopt. There may, in fact, be some of the forms of the so-called Bright's disease which are really affections of the kidney; there may be deposits or degenerative processes in the kidney simply superadded to the textural changes in the contracted organ. These intricate questions cannot be here discussed; they are, indeed, with present knowledge, beyond our solution. But examined in the light of the view which we have inquired into to-night; with each group of cases looked at by itself; with the structural alterations in other organs and parts than the kidneys, minutely inspected; with the condition of the bloodvessels everywhere, and of the nervous ganglia noted; with the antecedent changes as far as possible considered; it may be then that other groups will stand forth separately as showing diverse general states as their basis.

No pathological research in these days of keen induction stands long by itself. No view can be even approximately proved that we do not at once begin to search how, as practical physicians, we can make it available for the prevention or cure of disease. That the treatment of Bright's disease, and of what are regarded as its complications, is not what we wish for, is everywhere felt. If lines of investigation and of thought should lead to the recognition of the malady being a general rather than a local one, and discern its starting-point, lines of

practice which are in accordance will be pursued; and it is by following these lines that helpful and hopeful results will, I believe, come. As yet, even with the wish to work in that direction, we may not have the exact agents for the purpose. But science now is too resolute to halt helplessly before obstacles when once the path beyond is clearly recognized.

ORIGINAL ARTICLES.

HYDROFLUORIC ACID AS A DESTRUCTIVE AGENT TO THE TUBERCLE BACILLUS.

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THE treatment of pulmonary tuberculosis by inhalations of the vapor of hydrofluoric acid is essentially of French origin, and was first introduced in 1862, by Bastien, and made use of in 1886 by Charcot and Bouchard, but without attracting much attention. Later Seiler, in a communication to the French Academy of Medicine, July 21, 1885, and also Eugene Chevy, in a thesis written in the same year, reported good results from this treatment; while more recently Garcin, in a paper read before the same body, in September, 1887, warmly advocates the method as curative. In an exhaustive report, Professor Herard and his committee appointed by the French Academy, have recently confirmed Garcin's claims, and pronounced inhalations of the acid vapors capable of curing pulmonary tuberculosis "if not too far advanced." At Dr. Herard's request, H. Martin has made some experiments which indicate that this acid possesses valuable antiputrefactive and germicidal properties. In England, William Thompson, on September 12, 1887, at Manchester, drew the attention of the British Medical Association to the "intense antiseptic properties" of the fluosilicate of sodium.

Hydrofluoric acid was discovered by M. Fremy. The anhydrous acid is gaseous at ordinary temperatures, but is easily condensed into a fluid, which gives off large quantities of whitish fumes; it boils at 19.04°C ., has a density of 0.988 at 13° , and does not freeze at a temperature of -40°C . It is more commonly obtained by the calcination of the hydrofluoride or the fluoride of potassium, but may be economically prepared by the decomposition of calcium fluoride (fluorspar) under the influence of concentrated sulphuric acid in excess. The undiluted vapors are highly corrosive and caustic.

The treatment of phthisis by this chemical compound was suggested to Bastien by the fact that at the glass factories of Baccarat and St. Louis, the vapors of hydrofluoric acid, constantly used in etching, far from injuring the phthisical workmen exposed to them, seemed beneficial to their malady. Garcin places his patients for an hour daily in a small room or cabinet into which he forces air pre-

viously passed through a solution composed of one part of acid to three parts of water, held in a gutta-percha bottle; this acidulated air is mixed with the atmosphere of the cabinet in varying proportions according to the patient's susceptibility, from 20 to 30 litres to each cubic metre being considered sufficient. Perhaps the most convenient method, and the one which I have employed, is as follows: Having made a small room, in which the patient sits, as air-tight as possible, a lead crucible containing from one to two teaspoonfuls of the acid is placed in a tin vessel holding hot water, under which an alcohol lamp is kept burning; the amount of vapor evolved will depend on the amount of heat applied, which can be regulated according to the patient's tolerance.

The inhalations, when properly diluted, have produced no bad effects in any case, and are not contraindicated even when a tendency to hæmoptysis exists. It is probable that little systemic absorption occurs, as workmen in glass factories often pass many years breathing the fumes without any ill effect on their health. Garcin subjected 100 phthisical patients in all stages, for one hour daily, to this treatment, with the following results: 35 cures, 41 ameliorations, 10 deaths, and 14 with no effect. Under their use it is claimed all the symptoms undergo rapid amelioration the tubercle bacillus itself disappearing from the expectoration.

The hydrofluoric acid treatment is a natural outcome of the recent advances in the etiology of tuberculosis, and its avowed aim is the direct destruction of the tubercle bacillus in the air-passages. An agent capable of accomplishing this has long been the desideratum of many recent investigators, who have thought its discovery might materially advance the therapeutics of this disease. Leaving, therefore, the clinical and therapeutical aspects of the question to future investigation, the present research has been directed solely toward determining what destructive power, if any, hydrofluoric acid possesses over the tubercle bacillus, and the evidence obtained is herewith submitted. In the first experiments liquid solutions were employed, while in the others dilutions of the vapors with atmospheric air were tested.

LIQUID SOLUTIONS.

EXPERIMENT I.—Into five sterilized watch-glasses 5 c.c. of the following solutions of hydrofluoric acid are poured: 1:100, 1:200, 1:400, 1:800, 1:1600. From the surface of four blood-serum tubes covered with a rich growth of the tubercle bacillus some cultures are scraped, and with these three fresh tubes are planted, and two rabbits inoculated in the right lung and kept as controls. The remaining bacilli are then equally divided, added to the five solutions of acid in the watch-glasses, and well stirred. They are allowed to remain thus immersed for one hour, when larger bits of the culture are

picked out with a platinum needle, and plants from each watch-glass are made on two blood-serum tubes. The remaining bacilli are allowed to settle to the bottom of the vessels, the excess of acid solution drawn off with a pipette, and sterilized water added in its place, the whole again stirred and 2 c.c. taken from each solution in Koch's syringe and injected into the right lung of two healthy rabbits. All the tubes are labelled and placed in the thermostat, while the inoculated rabbits, together with the controls, are put in a large pen and well cared for.

February 23. The three control tubes are covered with growth. All the other tubes remain sterile, except those subjected to the 1:1600 solution, which show a perceptible growth.

The two control rabbits died February 21st and March 2d, and both present the usual lesions of advanced pulmonary tuberculosis. Cover-glass preparations, stained with fuchsin, show bacilli, and a pure culture of the tubercle bacillus is obtained by planting serum tubes with scrapings from the lesions.

25th. Two of the animals injected respectively with the germs exposed to the 1:100 and 1:200 solutions were found dead. The autopsies show in both extensive fibrinous exudation in the right pleura and gangrene of the lung. The diseased tissues were friable, of a uniform gray color, and present nowhere either tubercles or caseous spots. Several cover-glass preparations, made from scrapings of the cut surfaces of these lesions, show no bacilli; a number of tubes planted from the same source, at the end of three weeks, show no growth of tubercle bacilli; several of them are putrid.

In inoculating the rabbits on February 8th, in two of them the solutions of acid containing the bacilli were injected without first drawing off the excess of acid and replacing it with water. This precaution was only taken when the violent reaction at once caused in these animals by the injection was noticed. The above facts, when taken in connection with the autopsies, leave little doubt that these two deaths were due solely to the corrosive action of the acid.

The ten remaining animals were apparently in good health two months after inoculation, when they were killed. In all but three of them a small fibrous scar in the middle lobe of the right lung marks the point of inoculation, but the lungs, as well as all the other organs, are perfectly free from any disease. Both the animals inoculated with germs soaked in the 1:1600 solutions showed slight tubercular lesions as well as one of the rabbits injected with the 1:800 mixture containing bacilli; the limit of efficacy for watery solutions may, therefore, be fixed at between 1:400 and 1:800.

ACIDULATED AIR.

EXPERIMENT II.—December 28, 1887. A small bit of linen cloth attached to a platinum wire is first sterilized, then dipped on the condensation water of a tube containing a culture of the tubercle bacillus, and rubbed over the germs growing on the surface of the serum. It is then withdrawn, and from it

two tubes are planted in the usual way, and kept as controls. The wire with its rag is then inserted into a small round glass cylinder, corked at both ends with cotton wadding. Through this cylinder a current of atmospheric air, previously allowed to bubble through a 1:3 solution of hydrofluoric acid and water, held in a gutta-percha bottle is steadily passed for one hour, the necessary pressure being obtained from a compressed air apparatus attached to the gutta-percha bottle. At the end of an hour the wire and rag are withdrawn and rubbed on the surface of four solidified serum tubes. These, together with the controls, are put in the thermostat.

January 18. The controls are covered with growth, while the other tubes have remained sterile.

20th. The surface of the sterile tubes is scraped, and replants made from all of them.

February 14. No growth has appeared in any of the replants.

This experiments was repeated a month later, with the same results.

EXPERIMENT III.—December 28, 1887. Tubercle bacilli are mixed with sterilized water, and from this liquid two control tubes are planted, and two control rabbits inoculated in the right lung. The remainder of the liquid containing the germs is then subjected to a stream of air previously passed through a 1:3 mixture of hydrofluoric acid and water, the acidulated air being allowed to bubble up for an hour through the water in which the bacilli are floating. At the expiration of that time several tubes are planted with the cultures thus treated, and into the right lung of three rabbits two centimetres of the liquid which holds them are injected.

January 18. Controls show growth, while no change has taken place in the other tubes.

February 10. Control rabbits are killed, and show the usual lesions of moderately advanced pulmonary tuberculosis.

15th. Two of the rabbits are killed, and their lungs, as well as the other organs, found free from disease.

March 15. The third rabbit is killed, and all the organs are found normal.

EXPERIMENT IV.—Planted four serum tubes as nearly as possible with the same quantity of a culture of the tubercle bacillus. Two of these are subjected every other day, for ten days (five applications), to a current of air laden with the hydrofluoric acid vapors, as follows, while the two others act as controls. All the tubes are kept in the thermostat together; every other day the ones to be experimented on are quickly removed to another oven, heated at 38° C., and while there a current of air previously passed through a 1:5 solution of hydrofluoric acid in water is directed through a glass pipette into each tube for half an hour. At the expiration of this time they are removed to the thermostat and kept with the controls.

March 24. Controls show growth, and other tubes appear sterile.

The albumen in the serum, when exposed to the acid vapor, becomes firmly coagulated, as shown by its whitish color and loss of transparency, beside the acid reaction produced in the culture medium of

itself may inhibit the growth of the microbe on its surface without destroying it. To avoid as much as possible this source of error, on March 24 the surface of the sterile tubes is scraped, and replants from each made on freshly stiffened serum.

April 16. Replants show no growth.

This experiment was repeated several times, the solutions of acid and water being diluted each time, and three applications in all being made, with a day intervening. The dilutions used were 1:7, 1:9, 1:16, 1:30, 1:50. The limit of efficiency was reached at 1:50, luxuriant growths taking place after one application only of air passed through a solution of this strength, while a hardly perceptible growth occurred if the process was repeated three times. The other tubes remained sterile, as well as replants made from them.

As septic and putrefactive processes play so important a part in the progress of pulmonary phthisis, the following test of the influence of hydrofluoric acid vapors over the bacteria of putrefaction is made.

EXPERIMENT V.—March 13. A rag attached to a platinum wire is dipped into some putrid blood, and from this two control tubes, containing liquid serum, are planted. The rag is then placed under a bell-jar of a capacity of 1500 cubic centimetres, and to the centre of the glass, on which it rests, a bit of sheet lead, holding 0.20 of hydrofluoric acid, is pushed. The acid is vaporized by gentle heat, and the rag with its bacteria is left, exposed to the vapors for one hour. At the expiration of this time it is withdrawn, dipped successively in three liquid serum tubes, and these, together with the controls, are put in the thermostat.

18th. Controls putrid, other tubes unchanged; a drop of blood taken from each control stained with fuchsin, and examined under the microscope, shows innumerable bacteria; a drop from each of the other tubes, similarly treated, shows no bacteria.

The same experiment was repeated March 20, except that 0.15 of the acid was vaporized under the bell-jar instead of 0.20, all the conditions remaining the same.

24th. Controls putrid, and other tubes unchanged.

26th. All the tubes are putrid, and drops from each, placed under the microscope, show bacteria. Thus one part of acid, vaporized in 7500 of air, is the smallest quantity that will effectually destroy putrefactive bacteria after an hour's exposure.

EXPERIMENT VI.—March 3. Four rabbits are inoculated in the right lung, and under antiseptic precautions, in the anterior chamber of the right eye with a pure culture of the tubercle bacillus. Two are daily subjected to inhalations of hydrofluoric acid vapors as follows, while two are kept as controls; the purpose of the eye inoculations being to note in the living animals, by comparison with the controls, any influence that might be exercised on a distant lesion by the systemic absorption of the acid inhaled, while the lungs at the autopsies are to demonstrate any effect produced by the more direct contact of the vapors. The rabbits to be experimented on are placed daily for three hours in a large, nearly airtight box, into which acidulated air is conveyed by

means of a rubber tube tightly fitting a hole cut in the middle of the box. This rubber tube is directly connected with the gutta-percha bottle holding the acid solution, through which a condensed air apparatus forces a current of air. All the animals are kept together under the same conditions, except when those to be subjected to the treatment are placed for three hours daily in the box described above. The strength of the solution by which the air is charged varied somewhat, but most of the time was above 1:5. The rabbits appeared to experience no ill effects from their sojourn in those strong vapors. The ocular disease progressed so uniformly, and with such slight variations in all the animals, that the following record, taken from the notes made at the time, will answer for both the controls and the subjects of the experiment.

6th. The operation has been successful in every case, the cornea remaining quite clear; a few whitish specks of lymph are seen in front of, and around the edge of the pupil.

12th. Small tubercles visible on the iris.

18th. Cornea beginning to grow cloudy.

20th. Many small white dots (tubercles) are apparent in the substance of the cornea. Iris tubercles growing cheesy, diffuse inflammation of the iris is noted.

27th. Cornea becoming vascular.

31st. Slight bulging of corneal wound, which is becoming cheesy.

In one of the rabbits subjected to the inhalations no tubercles were made out on the iris, but they are plainly visible on the cornea. The character and extent of the lesions varied no more in the other animals than could easily be accounted for by the slight but unavoidable differences in the amount of virus introduced. Thus no appreciable effect was produced by the treatment on distant lesions. On the disease in the lungs with which the vapors were brought in close contact the results were as follows:

April 9. The controls are killed and both show besides the ocular tuberculosis, described above, the usual appearances of advanced pulmonary tuberculosis. Tubercles are found scattered everywhere over the pleura and invade the parenchyma of the right lung in many places; the middle lobe of this organ, which has been pierced by the needle, being almost completely solidified. Many cheesy spots are to be seen both on the pleura and on the cut surfaces of the pulmonary tissue. Frozen sections in the microtome, stained with hæmatoxylin, show tubercular deposits in the middle and lower lobes of the lung.

One of the rabbits subjected to the inhalations was noticed to suffer from diarrhœal symptoms on March 27th and died March 28th. The abdomen was retracted, the intestines congested and empty, but no tubercle was found in the abdominal cavity. On opening the chest, tubercles are seen freely scattered over the surface of the visceral and parietal pleura, a few of which are becoming cheesy. The left lung is sound with the exception of a small eruption of minute tubercles at one spot on the pleura. Sections made through the right lung show no solidification nor cheesy spots or any tubercle anywhere, except in the immediate vicinity

of the point of inoculation in the middle lobe, around which some solidification is present. At the distance of a few millimetres from this point, however, the pulmonary tissue appears normal. Fresh sections made on the freezing microtome through the pulmonary parenchyma at various distances, and stained with hæmatoxylin show under the microscope no tubercle, except in the immediate vicinity of the needle thrust in the middle lobe.

The other rabbit remained in excellent condition and was killed April 5th. The autopsy gave about the same results as that of his mate, the same pleuritic lesions are present, but more of the pulmonary parenchyma is involved. Frozen sections stained with hæmatoxylin show under the microscope some tubercle at a greater distance from the point of inoculation than in the preceding animal, but still nowhere as extensive as in both controls, and none in the lower lobe. Bacilli are present in the existing lesions of both these animals.

In comparing the autopsies all that can be said is that whereas no difference exists in the extent and character of the pleural disease, less tubercle has invaded the lung tissue proper in the animals subjected to the inhalations. The direction taken by the disease might in so small a number of cases be purely accidental, and no satisfactory conclusion can be arrived at from the result of this experiment, the proof being insufficient and of a somewhat uncertain character.

The evidence obtained by the first four experiments warrants the assumption that hydrofluoric acid, even when quite freely diluted with both water and air, is capable of destroying the tubercle bacillus, and indicates that even weaker dilutions than were employed might prove efficient to this end if oftener applied. The influence exercised by this chemical compound over putrefaction is demonstrated by Experiment V., while its therapeutic value is left undetermined by Experiment VI.

To what extent the above facts can be utilized in the therapeutics of the disease, future observation must determine. Dilute solutions of the acid, or, if these prove too caustic, of its sodium and ammonium compounds, which have been found by H. Martin much less irritating, might be tested in surgical tuberculosis with advantage. In the treatment of the existing lesions of pulmonary phthisis the hydrofluoric inhalations would at least possess over the antiseptic sprays, already in use, the advantages of tested efficiency and greater penetrability. It is evident, however, that even if the acidulated air could be breathed without injurious effects in dilutions which have been found to be efficient, but a small proportion of the bacilli, namely, those lying directly in contact with the atmospheric air, could thereby be destroyed while no antagonistic effect on those imbedded in solidified areas of lung, tubercular nodules, or diseased glands could be hoped for.

An excellent illustration of the inefficiency of antiseptics beyond their point of actual contact is given by the autopsies in Experiment VI., which showed the course of the tubercular pleurisy to have been entirely uninfluenced by the daily inhalations to which the animals were subjected.

It should be kept in view that so long as the tissues present a favorable nidus for the development of the bacilli, the destruction of a portion of them, if this should be found feasible, would not necessarily eradicate the disease. It is not likely that hydrofluoric acid can alter those chemical and vital changes in the organism which allow of the growth of this microbe, and to this end thus far those conditions which promote bodily vigor have alone been found effectual. The recommendations of the method however are, that its application is easy and does not interfere with the employment of hygienic and climatic treatment, and that by it we may hope to diminish the amount of virus against which the organism has to contend. Whether this hope will be realized, an extended clinical application of the treatment alone can determine.

A SUPPLEMENTAL ACCOUNT OF THE CASE OF A BEARDED WOMAN IN WHOSE BEHALF ELECTROLYSIS WAS FIRST EMPLOYED FOR THE DESTRUCTION OF THE HAIR PAPILLÆ.

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The case to which I wish to recall attention was published some years ago, and possesses considerable interest in two respects. In the first place, the young woman who is the subject of this communication, was the unfortunate owner of a beard that for strength and luxuriance rivalled the hirsute appendages of any man, and, secondly, she is the first woman ever operated on by electrolysis for the removal of "superfluous hair."

Under the title of "Case of a Bearded Woman," published in the *St. Louis Medical and Surgical Journal* for November, 1877, I gave a tolerably full account of the development and peculiarities of the abnormal growth of hair in this patient, but, to add further interest to the subsequent history, I shall take the liberty of making some brief quotations from the original article:

Miss X., twenty-two years of age; her general, mental, and physical characteristics are essentially feminine, and up to the age of eighteen there had appeared nothing to indicate her subsequent deformity. But about this time downy hairs began to be observed, and before a great while all the ordinary sites of the beard were occupied by this growth, which was of light color and silky texture. At this period she consulted a medical man, who advised a depilatory powder, stating that it would permanently

remove the obnoxious hairs. As a matter of course, the result was disastrous. From the repeated stimulation thus obtained the hairs soon became stiff and strong, the color deepened to a dark brown—almost black—and her beard became thicker and more profuse than is usual even with men.

For the further features of the case, and the references to the method of treatment adopted, I shall quote literally from my original paper, merely omitting unimportant details:

"The beard grows thickly and evenly on the lip, chin, cheeks, and in the submaxillary regions. The growth extends over the malar bones as true beard, and not, as is ordinarily seen, in the form of lanugo. There is no other abnormal growth of hair on the body or limbs. . . . The hair of the head is black, of fine texture, in ordinary amount, and quite long. There is nothing peculiar about it. . . . Miss X. has never shaved, but for the last three years has used a depilatory powder. To give an idea of the heaviness of the young lady's beard, I have often noticed, that after it had been closely taken off, the skin retained that blue-black color frequently seen in men with very dense beards after shaving. The beard is never allowed to grow more than a quarter of an inch in length, so that I am unable to state how long it would become if unmolested, but I presume, from all the indications, that it would be patriarchal in its proportions."

After having given some few other details in regard to the family history of the patient, etc., I introduced the subject of treatment in the following words:

"The radical cure of hirsuties by electrolysis is brilliant in its results, as it is only in this way the hair papillæ can be destroyed, thereby absolutely preventing a regrowth of the hairs."

In concluding the article, I called attention to the fact that my friend, Dr. Michel, had been using this method for four or five years in trichiasis and distichiasis, and I promised to give a detailed description of this process in its application to dermatological work at an early day.

At the time I made my report I had removed 248 hairs from Miss X.'s face by the electrolytic method, and subsequently, at irregular intervals, I took a considerable number more. In 1882, being pressed with a great deal of business of the same sort, I was fortunate in securing the assistance of Dr. Nelson, who has kindly furnished me with the following account of his observations in her case:

"I have no record of the number of hairs removed from her face, but I commenced the treatment August 10, 1882, and ended it in February, 1885. During the first part of this period I saw her once, twice, or three times each week. During the latter months she came four to nine times a week, and each séance lasted from one to two hours. There were about three hundred and fifty séances, and the number of hairs removed at each séance would vary from thirty to one hundred and fifty. After terminating the regular treatments in February, 1885, Miss X. returned in April and had eleven treatments, in July

she had seven, in September five, and in July, 1886, she had three, since which time I have not seen her.

"I think the result of the treatment conclusively demonstrated the efficacy of electrolysis in the relief of hirsuties. I should say that this patient's beard, if allowed to grow, would have been a full, strong beard for a man. It was very dark, almost black in color, and constituted a very serious deformity.

"I believe the final result to have been thoroughly satisfactory to Miss X., inasmuch as her face was considerably marked by variola; of course, the complexion was not smooth, but she was free from the annoyance of the hair when I last saw her, some eighteen months ago."

I think the result in this case may be very justly regarded as exceedingly happy and satisfactory, and it is a source of much gratification to me to know that similar successes are now being obtained every day by dermatologists all over the world.

In 1878, at the second annual meeting of the American Dermatological Association, having in the meantime had considerable further experience in the electrolytic procedure, I wrote a formal paper on the subject, since which time I, and many other dermatologists, have contributed a number of special articles on this method to the medical press of this country and Europe.

Since I first began work on Miss X., I and my assistants have destroyed many thousands of hair papillæ, and although I have seen women with very formidable growths of facial hairs, it has not been my fortune to encounter a similar case, and I sincerely trust that I never shall.

While no one now disputes the feasibility of the operation, I can remember very distinctly that when I began this work the general statement of the textbooks was that the radical treatment of such cases was unavailing, and that the pincers, the razor, or the depilatory were the only palliatives.

I may be excused, in this connection, a brief, practical digression. I have heard it occasionally stated that the hairs will return after the operation. Long since to test this matter I operated in marked

operators, and in regions thickly set with hairs the best operators must expect a certain proportion of failures on the first going over; and, furthermore, with some patients the hairs come away readily, while in others great difficulty is experienced.

Then, again, in a large number of instances an active state of hair production is going on when the patient comes for treatment, and often continues for an indefinite period, so that a case is seen time and again for years. On the other hand, when this tendency has exhausted itself the removal, when once accomplished, is accomplished for good. Such is evidently the case with Miss X. It is possibly true that the fine downy hairs interspersed between the operable ones are stimulated to a lustier growth by the electrolytic depilation, but of this I am not quite convinced; but even if this does occur, it makes very little difference, as in time they would assume larger proportions, even if left alone, and would have to suffer ultimate removal.

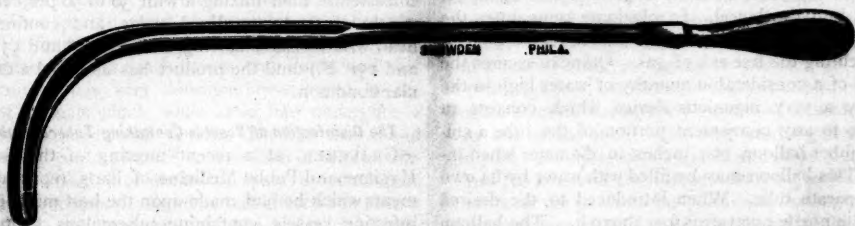
A MODIFIED STAFF FOR THE OPERATION OF LATERAL LITHOTOMY.

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In the operation of lateral lithotomy, a failure to enter the bladder properly has often happened. Such a mischance not only causes painful embarrassment and mortification to the surgeon, but may lead to urinary infiltration, pelvic cellulitis, and not infrequently to the death of the patient. This accident is not an imaginary one; it is frequently mentioned in the books, and I have seen it take place more than once at the hands of prominent surgeons.

The error in the operation may be regarded as twofold: *First*, the incision in the urethra may be insufficient; and, *second*, the recto-vesical space may be divided and opened up. The operator believes that he has entered the bladder, and with his forceps searches for the stone. In reality, he is groping behind the bladder, and becomes more bewildered



limited areas, such as in hairy moles, etc., and when the work has been *expertly* done, I have failed to see the hairs reappear, and it certainly must be confessed that in the case recorded above we have obtained a result as remarkable as it is gratifying.

Poor operators do not get as fair results as good

every moment, perhaps vaguely feeling through the vesical wall a stone which he cannot grasp.

I am satisfied that this failure to reach the bladder may be accounted for in two ways: *First*, from an uncertain holding or direction of the staff, on the part of the staff-holder, by which the end of the staff

is tilted out of the bladder, and the point of the knife is thus misdirected backward. *Secondly*, it may happen that when the knife is thrust along the staff, it may fail to take the curve, but may leave the groove at a tangent, slip downward and backward, and thus open up the post-vesical space. This slipping of the knife is favored by the construction of the lateral groove, which is usually such that the knife must hold its position by the pressure of its point against the staff. To obviate this difficulty, and to support the knife blade in its trajectory, I some years ago modified my left staff, by widening and bringing up the inferior lip of the groove in a spiral manner, so that this may form a shelf upon which the end of the knife may rest, and along which it may be thrust unerringly and safely into the bladder. An actual experience in many lithotomies has satisfied me of the advantages of the staff thus slightly modified, and I believe that by its use a high degree of certainty in the operation, and of confidence to the operator may be insured.

In the accompanying cut a representation of the modified staff is given.

MEDICAL PROGRESS.

The Technique of Intestinal Injections.—QUINCKE is quoted by the *Deutsche medicinische Wochenschrift* of April 5, 1888, in his description of methods of intestinal injections which he has recently found useful. In place of the hard tip which is ordinarily used on enema syringes, he substitutes a soft flexible nozzle about eight to eleven inches long, and of convenient calibre. The tip is slightly harder than the rest, and has two lateral openings; the external end is dilated somewhat, the whole resembling an oesophageal tube. It must be perfectly smooth, and of the best rubber. The insertion of such a tube is far less painful than the use of the ordinary tip. It may be ordinarily inserted two or three inches, but when necessary may be passed four or six inches without injury. This tube may be very easily cleansed, soap and water and carbolic acid sufficing to disinfect it thoroughly. An injection of oil may be readily given by filling the dilated external extremity with oil, and then attaching the irrigator tube; the water from the irrigator will force the oil before it into the bowel. In obstinate tympanites the tube may be allowed to lie in the bowel for an hour or more, securing the free exit of gas. Quincke secures the retention of a considerable quantity of water high in the bowel by a very ingenious device which consists in attaching to any convenient portion of the tube a collapsed rubber balloon two inches in diameter when inflated. This balloon may be filled with water by its own small separate tube. When introduced to the desired height, the nozzle aperture is free above it. The balloon is then filled with water, occluding the bowel; the desired injection is then introduced beyond it, and as much fluid as desired is thrown in at the desired level.

The Treatment of Ingrowing Nails.—PATIN is quoted by the *Centralblatt für Chirurgie* of April 7, 1888, as advising the following method of treatment:

After carefully cleansing the affected foot, he paints the granulations beneath the ingrowing nail with a solution of gutta-percha, 10 parts; in chloroform, 80 parts. This application is repeated as often as possible, and results in gradually raising the nail from the flesh, which heals under the protection of the film of gutta-percha.

Aconitine and Digitaline.—The *Revue Gén. de Clin. et de Thér.* of March 22, 1888, gives the following formula for the use of these alkaloids:

Digitalin.	gr. ⅓.
Sacchar. lact.	3 l.
Gummi Arab.	gr. 15.
Glycerin. et aq.	q. s.

To be made into 100 granules.

The Use of Antipyrin during Labor.—At a recent meeting of the Academy of Medicine of Paris QUEIREL reported that he had used antipyrin as an analgesic during labor in 15 or 20 cases, with excellent results. A hypodermatic injection of four grains was often given, and repeated without inconvenience. During the period of dilatation of the cervix the effect of antipyrin was especially good; the progress of labor was not retarded, but accelerated. Labor pains occasioned much less suffering, while the contractions of the uterus were rendered more vigorous. —*L'Abeille Médicale*, March 19, 1888.

Milk Jelly and Milk Powder.—The *American Druggist* for April, 1888, gives the following directions for preparing these milk foods:

As a variation in milk diet, the following is recommended by Professor Liebreich:

Heat one quart of milk with one pound of sugar, and when the sugar is dissolved continue the heat, at a boiling temperature, for about ten minutes. Now cool it well, and then add, *slowly* stirring, a solution of one ounce of gelatine in a cupful of water. Next add the juice of three or four lemons and three wineglassfuls of wine, brandy, or other liquor. Set the glasses containing the mixture in a cold place, so that the contents may gelatinize. It is necessary to have the milk quite cold before the other ingredients are added, as it would otherwise curdle.

Dried milk, in the form of powder, may be prepared by evaporating skimmed milk in a suitable apparatus, preferably in vacuo and under continued stirring, at a temperature of 60° to 70° C. (140° to 158° F.) to a syrupy consistence, then mixing it with 30 to 50 per cent. of its weight of finely powdered sugar, and continuing the heat, with constant stirring, between 30° and 55° C. (86° and 131° F.) until the product has assumed a dry, granular condition.

The Disinfection of Vessels Containing Tuberculous Sputum.

—GRAUCHER, at a recent meeting of the Society of Hygiene and Public Medicine of Paris, reported experiments which he had made upon the best methods of disinfecting vessels containing tuberculous sputum. He employed carbolic acid, 1 to 20; caustic potash solution, 1 to 20; sulphate of copper, 1 to 20; chloride of zinc, 1 to 20; and bichloride of mercury, 1 to 100. Of these bichloride of mercury only was efficient. In disinfecting sputa, water at a temperature of 212° F. was found efficient in destroying the tubercle bacilli. —*Le Progrès Médical*, March 31, 1888.

Cold Baths in Typhoid Fever.—The Paris correspondent of the *Medical Press* of April 11, 1888 writes that at the last meeting of the Société des Hôpitaux M. Richard brought forward the subject of treatment of typhoid, in which were included cold baths. He had recently seventy-six cases under his care, of which thirty-eight were treated after Brand's method and the remainder in the ordinary way. Of the first category only two died, while he lost four in the second. The cold baths, he found, were always very agreeable to the patient; the delirium, stupor, and sleeplessness disappeared almost completely. Bronchitis need not be considered as a counter-indication to the treatment, as several times he did not hesitate to order the baths with every symptom of the lung affection, and he never had any evil result. The temperature of the baths varies from 65° to 68° F., and they are administered between six in the morning and eleven in the evening. Each patient was bathed every three hours if his axillary temperature exceeded 99.5° F., and in grave cases every two hours. The average number given daily was five, of a quarter of an hour each. Cold affusions were practised on the head during the bath, and a glass of cold water was given him to drink. Two or three spoonfuls of good wine were drunk by the patient after each *séance*. M. Barth said that the danger of the Brand method consisted in the pneumonia which he frequently witnessed as a consequence of the immersion, but such was not the opinion of M. Renoy, who declared that statistics, on the contrary, proved that pneumonia is much less frequent in patients treated by cold baths than in those treated by other methods.

Papayotin in Diphtheria.—The *American Druggist* for April, 1888, gives the following formula:

Papayotin	75 grains.
Distilled water	90 minims.
Glycerin	½ fluidounce.

For local application to diphtheritic membranes by means of a camel's-hair pencil.

Tannin in the Treatment of Tubercular Diseases.—At the fifth meeting of the Società Italiana di Chirurgia, recently held at Naples, PROFESSOR ANDREA CECCHERELLI, of Parma, drew attention to the value of tannin in the treatment of local affections of tubercular origin. From experiments which he had made on animals, and from clinical experience, he believed it to be a powerful antiseptic, with a specific power of destroying the tubercular virus. He found that the addition of tannin prevented the putrefaction of animal tissues and fluids, and that decomposition was very considerably delayed in the bodies of animals which, while alive, had undergone a course of treatment with tannin. He had also found that whilst he could produce tuberculosis in certain animals by the injection of phthisical sputa, or of tubercle bacilli, the injections produced no bad effect when tannin was injected simultaneously, or was given internally every day for some time. He had treated twenty patients suffering from tubercular diseases with tannin, both externally and internally, with very satisfactory results. He, therefore, looks upon tannin as an excellent remedy in tubercular affections of the bones and joints; under its influence ulcers heal kindly, any tubercular formations that may already exist are destroyed, and general-

ization of the disease is prevented. Dr. Ceccherelli considers that tannin is much superior to iodoform in the treatment of tubercular disease, besides having the further advantage of being perfectly harmless.—*British Medical Journal*, April 7, 1888.

Hydrosalpinx Treated by Apostoli's Electrical Method.—APOSTOLI, of Paris, in a recent clinical lecture, exhibited a case of salpingitis which he had treated by galvanopuncture, on two occasions, with a diminution of the hydrosalpinx present and an improvement in the patient's general condition. He considers the method of treatment by the galvano-cautery a most valuable procedure in non-suppurating inflammation of the uterine appendages, and regards penetration of exudates in the vaginal cul-de-sac through the vaginal wall a proper procedure, with antiseptic precautions and rest for the patient.—*Revue de Thérapeutique*, March 15, 1888.

The Treatment of Bronchitis.—The *Therapeutic Gazette* of April 16, 1888, in an editorial on this subject, gives the following formulæ:

For the acute stage:

R.—Potass. citrat.	ʒj.
Suc. limonis	f ʒiss.
Syr. ipecac.	f ʒss.
Tr. opii camph.	f ʒij.
Syrupi	q. s. ad f ʒij.

S.—Dessertspoonful every two hours.

After the acute stage:

R.—Ammonii chloridi,	
Ext. glycyrrhizæ	āā ʒiss.
Glycerini	f ʒss.
Mucil. acaciæ	f ʒij.
Syrupi,	
Aquæ	āā q. s. ad f ʒij.

S.—Dessertspoonful every two hours.

Dermepenthesis, or Animal Skin-grafting.—CARDOGAN-MASTERMAN, in the *Provincial Medical Journal* of April 2, 1888, reports the following case of successful grafting with rabbit's skin:

A middle-aged tradesman, who had been drinking to slight excess for some years, came to me with a recent traumatic orchitis. The pain and swelling were excessive, so morphia was given, three leeches applied, and an ice-bag. In the night acute *delirium tremens* developed, and when violently struggling to escape from the grasp of two neighbors, who were trying to put him in bed, the swollen scrotum was severely bruised—I think knelt upon—by one of the men. The next morning it was black and cold. Poultices were applied, and so on, but in a day or two the whole of the integument sloughed away from the root of the penis to the perineum, leaving the pouch of the testicles exposed, and covered only by the pale pink lattice of the *cremaster* muscle. When the wound had been cleaned, there was a border of but half an inch wide of the scrotum left in a healthy condition, and the case was complicated by the extremely bad condition of the patient's health generally, and extensive bedsores. I found, however, that a circular piece of skin, two inches in diameter, would just cover the testicles; and, with little

hope of success, again tried the rabbit as its source. A young one was procured, the area marked out with ink on its previously clipped abdomen, the animal killed by a blow on its neck, and the piece of skin rapidly dissected off and applied on the clean wound surface, pressed closely down, covered with a piece of lint dipped in hot water, and then with a fair-sized linseed-meal poultice. The latter was, in turn, kept hot without removal by an India-rubber hot-water bag, which was frequently emptied and refitted. At the end of forty-eight hours the transferred skin was cautiously examined, and found to be adherent. A fresh poultice was applied and reinforced as before for three days longer, when the outer layer came away with the fur, leaving a firm, smooth integument, looking more like the mucous lining of the lips than ordinary skin, and when I last saw it so it remained.

Cancer Treated by Erysipelas Inoculation.—The *Lancet* of April 8, 1888, writes as follows on this subject: That an attack of erysipelas will often profoundly modify, or even cure, another disease which may be present in the subject at the time has long been known; but it remained for Busch and Fehleisen deliberately to expose patients suffering from malignant growths to the action of the virus in the hope of curing the graver malady; Fehleisen's were the first cases in which the virus was inoculated, and his cases served as subsidiary confirmation of the pathogenic character of the streptococcus which he had isolated, and cultures of which were employed in his inoculations. The method, he remarks, is naturally only to be thought of when the malignant growth is beyond the reach of operative removal. (See "Memoir on Erysipelas," in the selected essays published by the New Sydenham Society, 1886.) The most recent adoption of this measure is that recorded by Dr. Axel Holst, of Christiania, in the current number of the *Centralblatt für Bakteriologie* (No. 13).

The patient was a woman, aged forty, who had a recurrent carcinoma of the left breast, for which she declined further operation. In a few months the cancer had infiltrated the greater part of the surface of the right half of the chest, forming a red brawny mass, with a raw surface, nodulated on the margins, whilst the axillary and clavicular glands were much enlarged, and the upper limb oedematous. In spite of the unfavorable aspect of the case, it was decided to try the effect of erysipelas inoculation. Accordingly, on August 10th last, the inoculation was performed by scarification of the raw surface, the cultures used being the fifteenth generation (in peptone agar-agar) from a case of erysipelas nineteen months and a half previously. Beyond a slight rigor next day, no effect followed; and it was further found that the material gave no result when inoculated in a rabbit's ear.

Dr. Fehleisen was applied to, and on the 22d the material he sent was inoculated in several parts of the diseased surface, and this time with success. After twenty-one hours the patient had a series of rigors followed by the appearance of an erysipelatous blush, which, within thirty hours, extended over the whole right arm, and later spread to the left side of the chest, back, and even to the left arm. In a few days the erysipelatous area was confined to a margin from one and one-quarter to three inches in width; and on the seventh day the fever, which throughout had not been high, fell by crisis. At the end of four

months and a half the erysipelas still persisted on the right arm, but the patient had manifestly lost ground.

During the first two months and a half the progress of the cancer appeared to be arrested, and for some distance the wound had healed over, whilst the induration had become less marked. But the right arm still remained oedematous, and after the period named the ulceration broke out afresh, the supraclavicular glands again increased in size, and fresh nodules appeared, one in the left breast. The inoculation had, then, probably prolonged life, for the arrest in the progress of the cancer was marked; but it may well be that the patient's loss of strength and of appetite (which prior to the inoculation had been remarkably good) were due to the erysipelas, which persisted on the right arm to the end. To us it seems that the case was hardly a suitable one for this treatment, which, at any time must, to say the least, require some courage to adopt.

The Treatment of Aphthæ.—HIRTZ prescribes the following:

Aquæ destill.	parts 8.
Tinct. coca	parts 2.
Sodii salicylat.	parts 2.

The mouth should be cleansed with this mixture, on soft cotton, five or six times daily.—*Revue de Thérapeutique*, March 15, 1888.

Surgical Morality.—The *Medical Press* of April 4, 1888, writes very appropriately on this subject as follows:

A pernicious practice obtains among surgeons of publishing only their successful cases. Not only is the practice not strictly honest, but it inflicts positive harm, seeing that the result may be to mislead their readers as to the value of this or that procedure. This is particularly striking in the matter of wiring fractured patellæ. The medical journals are continually publishing cases which certify to the satisfactory results obtained, but we do not remember to have seen one for a long time in which the risks and disadvantages of this somewhat heroic treatment are set forth. Yet it has occurred to our knowledge that in the practice of one surgeon at least two cases recently developed very severe inflammatory symptoms as a sequel to the operation, which, in one of them, proved fatal. Now the inconvenience caused by an imperfectly united patella is, after all, but small, and a mortality of even one per cent. would suffice to render the operation unjustifiable; at any rate, without placing the patient in full possession of the arguments for and against surgical interference. Too many men are blind to the fact that often the greatest amount of information is to be learned from the unsuccessful cases. To ignore non-successes is, moreover, to act in an unscientific and reprehensible spirit, for no true surgeon could, or ought to wish to perpetuate a method which can only be made popular by "cooking" the statistics.

Salol Collodion for Fissured Nipples.—The *Gazette de Gynécologie* of March 1, 1888, gives the following formula:

Salol,	
Ether	aa 3 i.
Dissolve and add	
Collodion. flex.	3 7/8.

THE MEDICAL NEWS.

A WEEKLY JOURNAL
OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication. When necessary to elucidate the text, illustrations will be furnished without cost to the author. Editor's address, No. 1004 Walnut St., Philadelphia.

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SATURDAY, MAY 5, 1888.

THE RELATION OF HEART AND KIDNEY AFFECTIONS.

EVER since Bright's memorable observations, the connection between heart and kidney affections has been the subject of much speculation and study, and with an increasing knowledge of the anatomical facts the interest in the question has rather heightened than waned. In the Middleton-Goldsmith lecture for this year, which we present to our readers in this number, DR. DA COSTA discusses certain important aspects of the problem.

Two main questions are offered. Does disease of the heart lead to disease of the kidneys, and what is the relation of renal affections to cardiac disease? On the first point Dr. Da Costa has a large amount of valuable material to offer, and deals with this side of the problem with a fulness which its importance merits. The results of a careful analysis of 127 cases of valvular disease show that in only 8 there was actual renal disease, amounting to more than congestion, and in not one was the kidney contracted. These clinical results contrast strongly with the post-mortem records of Delafield, quoted by Dr. Da Costa, in which of 137 cases of death from heart disease there were 27 large white kidneys, 29 atrophied kidneys, and 28 of chronic nephritis, which could not be classed as either large white or atrophied organs. The conclusion reached is, that heart disease rarely leads to chronic renal disease, but to the well-known large, firm, congested organs. Of valvular affections of the heart, associated with

disease of the kidney, there were 41 cases in 101 instances of Bright's disease (57 acute and 44 chronic). Of these 41 cases of valvular lesion 29 were Bright's cases of the chronic type, and 12 were of the acute type. In 13 of the 29 chronic cases and in 3 of the acute cases, rheumatism was an antecedent. One of the most interesting points in this connection is Dr. Da Costa's experience in 79 cases of acute Bright's disease. In only 16 of these there was valvular disease, but neither in these nor in any of the other cases could hypertrophy be determined. No support is here found for the statement of Traube, which has been very generally accepted, that even in acute nephritis hypertrophy of the left ventricle can be determined within a month or six weeks from the date of the onset. Observations on the arterial tension in these cases would have been of value.

Naturally the chief interest in this subject centres in the hypertrophy without valve lesion, which is so commonly associated with the contracted kidneys of chronic Bright's disease; and, as a rule, with extensive change in the arterial coats.

The various theories which have been advanced to explain this condition are reviewed and found inadequate, and the suggestion is made that the hypertrophy as well as, to a great extent, the vascular changes are the result of a common process which takes its origin in the ganglionic system. In eleven cases changes were found in the inferior cervical ganglia, indicating atrophy and fibrosis. Dr. Da Costa believes that in a deranged nerve influence, depending upon widespread changes in the ganglionic system, a solution of the question will be found. To this general cause may be reasonably attributed the great and universal alteration found in heart, vessels, and kidneys in chronic Bright's disease. There is no inherent improbability in this view, for we know how powerfully nutrition is influenced by changes in the nerve centres, but the anatomical question cannot yet be considered as finally settled. The investigations of Hale White would indicate that the very changes here described are extremely common in many diseases, and the tendency of late has been against attributing any special importance to these alterations. The suggestion of the lecturer, however, adds interest to the whole question, and brings into prominence a hitherto neglected aspect, from the further consideration of which new light may be thrown on many of the obscure problems in the etiology of chronic Bright's disease.

CEREBRAL ACCIDENTS IN EMPYEMA.

THE reflex accidents which occur in the course of the surgical treatment of purulent pleurisy deserve more exact investigation than has been accorded them. Striking as clinical phenomena in their mildest form, they become invested with peculiar interest when we recognize in them the mechanism of that appalling sudden death which has occasionally occurred during the act of washing out the pleural cavity.

The free use of the bistoury in effecting the freest drainage of the pleura, which the antiseptic methods of modern surgery permit, has done away with the necessity for irrigating these cavities, and it is probable that cerebral accidents will become much less common in the future. The fact that grave reflex accidents may be provoked, under circumstances not to be foreseen, by injecting the pleural cavity, and even by the introduction of a sound, must lead to the eventual abandonment of these procedures. Meanwhile, the intelligent study of the subject will serve to hasten this desirable result.

The investigations of Aubouin, in 1878, of Landouzy, 1880, and of Martin, 1881, have recently been extended by DE CÉRENVILLE (*Revue Médicale de la Suisse Romande*, January 20, 1888), who has added to the list of cases six occurring under his personal observation. These he describes under the designation *Epilepsie Pleurétique*. The attack begins without warning, and presents the characteristics of an ordinary epileptic seizure. Its duration is extremely variable. It may last five minutes, an hour or two, or, with intermissions, several days. It may terminate in death as sudden as that of aortic disease, or in prompt recovery without repetition of convulsions. Fugacious palsies are noted; less commonly persistent monoplegias or hemiplegia. These reflexes are caused by mechanical irritation of the pleural surface, usually by injection of various fluids, exceptionally, as in a case of Leudet's, by the sound, while in one case reported by Billroth the nervous manifestations followed the insufflation of iodoform. Hemorrhage from the pleura has been coincidentally noted in a large proportion of the cases, but it is clear from a study of the reports that, while more force than usual has been employed in administering the injections in a few instances, undue violence plays no necessary part in the causation of these accidents. It is a singular fact, moreover, that they occur late in the course of treatment—in thirteen cases once only within ten days, in nine instances between the twen-

tieth and seventieth day, three times after the seventieth day, and once after the lapse of twenty months. They cannot, therefore, be ascribed to the shock of the primary operation, nor to the contact of irritating liquids with the pleural surface at the moment that it ceases to be bathed with accustomed pus. De Cérenville conjectures that the cerebral reflexes of empyema are in some unknown way causally related to new anatomical conditions developed in the process of cicatrization.

The author concludes his paper with the suggestion that injection of the pleural cavity should not be intrusted to a subordinate, who is not *un homme de l'art*, but should be practised by the physician himself, or by a capable assistant. We venture to go further, and emphasize the rule that such injections should not be practised at all, and to this rule there will be found few if any exceptions.

THE ACTION OF STROPHANTHUS.

IN late numbers of THE MEDICAL NEWS we have called attention to the action of strophanthus upon the circulation, and now take pleasure in calling attention to a valuable series of researches by FRAENKEL on the use of this drug in heart disease. Administered in a dose of five to fifteen drops three times a day Fraenkel finds (*Deutsche med. Wochen.* of February 23 and March 1, 1888) the drug quite useful in those cases of heart trouble dependent either upon valvular disease or upon inefficiency of the cardiac muscle. In excessive dilatation, or in circulatory lesions resulting from chronic contracted kidney, he believes it to be useful, but that it can in any way replace digitalis in his hands is apparently impossible. In some cases of valvular diseases he used it with negative results. In cases of arterial sclerosis of all varieties and causes Fraenkel found strophanthus of some value, although he found it necessary to give as much as fifteen drops of the tincture three times a day; a dose somewhat larger than that commonly employed in this country.

In conclusion, Fraenkel summarizes his remarks to the following effect: That strophanthus is an efficient heart tonic which can in no sense approach to digitalis, save in some individual cases, where it seems to act more favorably, owing to the presence of some peculiar condition. As a result of this he states that, sometimes when nothing but disappointment has followed the use of the older remedy, the greatest success has followed the employment of strophanthus.

The best results reached with the use of strophanthus were in functional disorders, however, such as those commonly brought about by alcohol and tobacco, and also in the removal of ascites dependent upon portal engorgement.

A SAD tragedy has recently occurred in a New England town, which will call public attention to the perils that attend the new school of quackery which pretends to heal all manner of disease by prayer alone. In this case, the lives of a young mother and her newborn infant were sacrificed to this new school of "Christian science," so-called. The responsible attendant was the dead woman's mother, who, having become a convert to the new fad, was content to experiment with it upon her own family; another "scientist" was also present. No physician was called in until after both the victims were lifeless. The woman died by hemorrhage, and for the child nothing was done. An autopsy upon both bodies was made in the presence of the medical examiner of the district, and it was conclusively shown that the mother and child were healthy before death, and that they might have been saved if they had had such attention as an ordinary nurse could have rendered. A prosecution of the two deluded women for criminal neglect will presently be begun. This is not the first time that the heresy of curing disease by prayer has been responsible for loss of life, but this is the first instance within our knowledge where there has been a double casualty. If by this sad event the eyes of the public shall be opened to the dangerous tendencies of this do-nothing treatment, the sacrifice may not have been in vain.

The rapid spread throughout the country of this heresy has been remarkable, and its success as a money-getting scheme is without parallel in the history of modern quackery. It has very little to do with the poor, but makes all its appeal to a "fine class of people," many of whom have heretofore been addicted to homœopathy. The presumption is that its career, though brilliant, will be short-lived.

THE Medical and Chirurgical Faculty of Maryland have elected the following officers for the ensuing year:

President.—John Morris, M.D.

Vice-Presidents.—J. E. Michael, M.D., Thomas B. Evans, M.D.

Recording Secretary.—G. Lane Taneyhill, M.D.

Assistant Secretary.—Robert T. Wilson, M.D.

Treasurer.—W. F. A. Kemp, M.D.

Executive Council.—I. E. Atkinson, M.D.; P. C. Williams, M.D.; S. W. Miltenberger, M.D.; George H. Rohé, M.D.; Thomas S. Lattimer, M.D.

THE Association of Medical Superintendents of American Institutions for the Insane will hold its forty-second annual session at Old Point Comfort, Va., May 15, 1888.

THE Academy of Medicine of Belgium offers, through an anonymous donor, a prize of 8000 francs (\$1600) for the best essay on the Clinical History, Pathogenesis, and Therapeutics of Epilepsy; the offer closes December 31, 1888. For essays worthy of mention, from 300 to 1000 francs will be given. For the discovery of an agent which shall be of genuine value in the permanent cure of epilepsy, 25,000 francs are offered. Further information may be obtained from the secretary of the Academy.

THE fifth meeting of the Society of Italian Surgeons convened in Naples, on March 26, 1888, under the presidency of Prof. d'Antona, of Naples.

THE Marshall Hall prize, for the best original work, in English, on the physiology and pathology of the nervous system, during a period of five years, has been awarded to Dr. Gaskell, Lecturer at Cambridge.

THE death of Professor de Chaumont, Professor of Military Hygiene at Netley, is announced. In association with Professor Parkes he made valuable studies in hygiene, under the direction of the British Government.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, April 2, 1888.

THE PRESIDENT, D. HAYES AGNEW, M.D.,
IN THE CHAIR.

DR. W. W. KEEN reported the following

CASE OF EXTIRPATION OF ENLARGED CERVICAL GLANDS UNDER COCAINE.

Miss S., aged twenty-two years, medical student, consulted me in December, 1886, in reference to a number of enlarged glands in the neck; she was of a tubercular family, and was afflicted with a curvature of the spine. In July, 1885, Dr. Henry B. Sands, of New York, removed thirteen glands by making an incision in the left side of the neck, reaching from just below the mastoid process nearly to the clavicle. A keloid appeared in the scar

shortly after the operation, beginning at the lower end and invading the whole scar, including the stitches, then disappeared from below upward, until one inch from the upper end was the only part that was normal. This keloid invasion and decline changed the scar from nearly a linear cicatrix to one about an inch wide.

November 24, 1885, Dr. Sands removed from the right axilla a number of enlarged glands; certainly a dozen.

December 24, 1886, I removed one quite large gland from above the clavicle on the left side; my incision being at the line of the old scar. I injected a four per cent. solution of cocaine under the skin, and the only pain she felt (although the tumor was deeply placed) was when I divided a small cutaneous nerve. She recovered without any trouble.

May 27, 1887, a large number of glands had rapidly increased in size; I made an incision in the line of the old scar, throughout its entire length, and after dissecting through the dense cicatrized tissue, and cutting the sterno-cleido-mastoid muscle entirely loose from the parts beneath, excepting at its two ends, I removed eighteen glands, from the size of a large pea to a good-sized hickory nut, which lay, some of them, under the occiput, most of them under the sterno-cleido, and in connection with the great vessels, and three of them just above the clavicle. These last had to be reached by an incision at an angle with the first one, forming an inverted V.

Ether was given, and strict antisepsis was used, with bichloride of mercury and carbolic acid, and bichloride dressings. A rubber drainage tube and a bundle of horsehairs were used for combined tubular and capillary drainage. The dressings were changed at the end of twenty-four hours, the drainage tube removed, leaving the horsehair *in situ*. On the third day, the temperature having risen to 102° F., I redressed the wound, but found everything in good condition. On the fifth day I again dressed the wound and found it entirely well. The horsehair stitches were removed.

The temperature had risen still higher, but this was explained by a severe pain in the knee, which ushered in an attack of rheumatism. This proved to be a prolonged and severe attack, but she recovered from it ultimately without any heart trouble, and resumed her studies in the fall of 1887.

March 9, 1888, a number of glands had enlarged, most of them further back in the neck, along the posterior border of the sterno-cleido-mastoid; and one as large as a filbert under the occiput. Ether caused her so much discomfort that she decided again to try the effect of cocaine. I injected fifteen minims of a four per cent. solution at the site of the suboccipital gland, and thirty minims along the old scar, in which I proposed making my chief incision. I then dissected out six glands in all.

The dissection was difficult, on account of the cicatricial tissue, and occupied one hour. I poured into the wound a few drops of the solution of cocaine three times; less than two drachms being used in all, including that injected under the skin. The patient declared, both then and subsequently, that she felt no pain, and as a medical student being interested in the operation, part of the time she held a hand-glass in her hand, and watched the different steps of the operation, and made comments on them.

The wound was approximated with Chinese silk sutures (sublimated), and a sublimated dressing applied.

For the suboccipital wound horsehair alone was employed; for the larger wound, combined tubular and capillary drainage. I was particular to make my incision in the line of the old scar, as after the previous operation some moderately marked keloid changes took place in the new scar, while the incision and stitch wounds in the old scar were free from any such trouble.

The following is a record of the state of the pulse and of the temperature:

March 9, 12 M., pulse 78, temp. 99.2°. 2 to 3 P.M., operation. 4 P.M., pulse 94, temp. 102.4°. 7 P.M., pulse 86, temp. 99.3°.

10th, 7.30 A.M., pulse 86, temp. 98.4°. 5 P.M., pulse 98, temp. 98.4°.

After this date the pulse varied very little from 74, and the temperature kept at 98.4°.

I dressed the wound on the 10th and removed the rubber drainage-tube, and again on the 14th, when I removed all the horsehair and all the stitches. The wound was well excepting the small sinus left by the horsehair, which healed quickly.

Remarks: There are four points which seem to me interesting in connection with this case. The patient has had five operations and over fifty glands removed. The glands were a great mental annoyance to her, and, as they were undergoing cheesy degeneration and would have resulted in abscesses, the operation was very satisfactory both to the patient and to myself. Whether it has saved her any further constitutional infection is open to doubt, but, at least, the operation has not done any harm in that direction; in my opinion it has done good. It is a very good illustration of the ease with which such glands may be even repeatedly operated on with speedy recovery and no ill effects. I have now repeatedly removed such enlarged scrofulous glands, and in no case have I seen occasion to regret it.

Secondly, the effect of cocaine.

The first operation which I did upon her with cocaine was very successful, and the patient's discomfort after ether was so very great that she was willing to undergo a considerable amount of pain to avoid it. The amount of cocaine used at the last operation was not large, and in its effects was a perfect success.

I think the patient was under a certain amount of mental exaltation, which was shown by a slight rise in the temperature before the operation, although in perfect health; and this may account, to some extent, for her not feeling any pain.

She has declared to me repeatedly since the operation, that in spite of the small amount used, the entire operation (which lasted one hour) was painless.

It was very curious to me to see her holding a hand-glass in her hand to watch the operation, and to hear her make comments upon it. It is a thing quite new in my personal experience during any serious operation. Her conduct in this respect seems certainly to bear out the supposition that she did not feel any pain.

Third: The rise in temperature. This was too sudden to be caused by inflammation, for only one hour had elapsed since the operation, and the rise of temperature had entirely disappeared in three hours.

For this rise in temperature three possible causes may be suggested. First. Its origin might be psychical. The patient certainly was not a little excited by the operation. I, myself, have never seen a rise in temperature that I

could attribute to emotion. My friend, Dr. Osler, tells me that it is not uncommon in children to see a rise of from one to two degrees caused by emotion, such as crying spells. In this case, however, the rise was three degrees.

Secondly. It is possible that it was due to the constitutional action of the cocaine. Dr. H. C. Wood informs me that this is undoubtedly a symptom of cocaine action, and that some persons are excessively susceptible to small amounts of cocaine. In this case, during the entire hour which the operation lasted, the total amount used was fifteen minims, hypodermatically, of the four per cent. solution, and about forty-five minims were poured into the wound, but most of this visibly ran off on the surface.

Dr. Wood suggests a third possibility: that cocaine may paralyze the afferent sensory nerve, and not paralyze the afferent nerves connected with the heat centres. These points I must leave to physiologists and pharmacologists.

Fourthly. The unusual course of keloid, which invaded the scar from below, travelled upward and disappeared in the same manner from below upward.

DR. THOMAS G. MORTON exhibited the

SPECIMENS FROM TWO CASES OF REMOVAL OF THE APPENDIX VERMIFORMIS BY ABDOMINAL SECTION.

The speaker stated that he had already reported two cases of removal of the appendix vermiformis to the Academy. One of these cases had died and one had recovered. Of the two cases reported in the present communication, one had died and the other recovered. In the fatal cases, the result might have been different if the operation had been performed earlier.

The first case was that of a child ten years of age. When seen the patient was in a condition bordering on collapse. The appendix presented a large perforation, and three foreign bodies were found. There was inflammation of the general peritoneal cavity, and the patient died of exhaustion eight or ten hours after the operation.

The second case was that of a lady, twenty-eight years of age. Two years ago what appeared to be a simple abscess in the right iliac region was opened. She recovered and remained in good health until three weeks ago, when symptoms of rapid inflammation in the region of the appendix appeared. The abdomen was opened by a lateral incision on the third day; a large perforation in the appendix was found, but no foreign body. The appendix was removed and the abdominal cavity was washed out with hot water. Two drainage tubes were introduced—one of rubber, the other glass—and the wound was kept open to permit of the escape of probable sloughs.

Special stress was laid on the advisability in cases of extensive inflammation where sloughing of cellular tissue is likely to occur, of leaving a very free opening for the escape of the results of destructive inflammation.

DR. J. EWING MEARS said that with reference to the incision to be employed in these cases, he thought the experience of operators has led to the conclusion that up to a certain time the lateral incision is the one to be selected. Dr. Weir fixes the time at five days. After the abscess has been evacuated, it is to be treated as any other abscess cavity. When, however, perforation of the

abscess has occurred and the general peritoneal cavity is involved, median laparotomy should be chosen, and the case treated as we should treat any other case of suppurative peritonitis.

THIRD FRENCH CONGRESS OF SURGERY.

Held in Paris from March 12 to 17, 1888.

(Specially reported for THE MEDICAL NEWS.)

(Continued from page 474.)

ON DERMOID CYSTS OF THE ANTERIOR FONTANELLE.

DR. LANNELONGUE, of Paris, said that in none of the ten cases published in the past, had the diagnosis been made beforehand; it had always been done by punctures or incisions. These cysts are very rare; he had found only twelve cases, two being his own. In these two cases he established a correct diagnosis. The tumor occupies the large fontanelle in young children, and later the neighboring bony parts of the bregma. Of spherical form, widely applied to the surface of the cranium, it is very fluctuating. In three cases it was found transparent, without murmur or beating; certain tumors, however, soon after birth, have presented beating. The tumor is irreducible, and is not modified by change of position. On its surface the skin is normal and movable. Deeper it is adherent to the cranial parietes, which encircle it in a bony projection. These cysts have only been observed a few days after birth; they have been seen in old people, but their presence is recognized in the first two or three years. At first the size of a hazelnut, they may acquire the size of an egg or fist. Diagnosis is difficult, especially when the tumor is transparent. The idea of a meningocele can be disregarded, for a dermoid cyst is irreducible, and a meningocele does not exist in the region of the anterior fontanelle, outside of teratological cases. Tapping is not absolutely necessary for diagnosis; sometimes even it is of no use, the liquid might be like the cephalospinal fluid. Dissection of the tumor will present at its base the cranial wall, and the fontanelle, which is never completely obliterated. Its structure is that of a dermoid cyst; the liquid is clear, devoid of albumen, and rich in sodium chloride.

These cysts, like those of other regions, have for their origin the surrounding of an ectodermic island in the thickness of the vascular layer at the time of embryonic development. These cysts are median as regards position. There is a circumstance favorable to this surrounding of the ectoderm, in the suture of the dorsal embryonal groove, at the bottom of which develops the central nervous system.

Trying to explain why dermoid cysts of the cranium are situated more often at the lambdoid portion of the bregma than at any other point of the median line, he thought that the surrounded ectodermic islets can be displaced and pushed aside by an ossification of the cranial bones; they are in this manner pushed to the fontanelle spaces. The only treatment is the complete extirpation of the tumor; the operation, done with care, presents no danger, even for children of eight or ten months; the fontanelle is not always ossified, but this is no contraindication against intervention.

DR. OLLIER, of Lyons, had seen three cases of dermoid cysts, one of which is particularly interesting: it was a

cyst, the base of which was adherent to the cranial wall for about two to three inches. He was obliged to leave, without extirpating it, the circular bottom of the cyst, and he was surprised, some time after, to find that cure had taken place, and that the bottom of the cystic sac replaced the hairy scalp.

USEFULNESS OF LARGE INCISIONS IN THE ŒDEMAS OF MALIGNANT CARBUNCLES.

DR. M. POLLOSSON, of Lyons, reported the following case: A man, aged forty-three, working in leather, was taken with a malignant pustule of the left cheek. In a few hours the œdema extended to the cheek, neck, and chest, with danger of asphyxia. He immediately extirpated the pustule with Paquelin's thermo-cautery, and made twenty-five large incisions and numerous punctures with the same instrument on the cheek, neck, and chest. The total length of incision must have been about an inch and a half; the asphyxia disappeared, the œdema subsided, and general symptoms were better. He thought these large incisions are invaluable in grave cases. They allow the running out of the serum, and permit the application of antiseptics.

RESECTION OF BONES TO REMEDY LOSS OF SUBSTANCE OF SOFT TISSUES.

DR. E. CIRMISSON, of Paris, has practised this operation twice. His first case was a woman, aged thirty-five years, epileptic, who had two severe wounds of both forearms. The result was on the left side, a flexion at right angles of the hand on the forearm, making the hand useless. In May, 1887, he excised, as completely as possible, the cicatricial tissue of the antero-inferior region of the forearm; he tried to straighten the hand, but in making this movement there remained at the antero-inferior part of the forearm a large loss of cutaneous substance, which could not have filled up without reproducing the forearm deformity. He then excised $1\frac{1}{4}$ inches of both radius and ulna, at a short distance above the carpus. The bony consolidation did not take place, and in October, 1887, he sutured the two ends of the radius; cure took place by first intention, and toward the end of December consolidation was complete. The silver suture remains encysted in the tissues.

His second case was a man, forty years of age, in whom a severe burn of the right leg had determined an equinovarus club-foot, and a permanent ulceration in front of the external malleolus. On the 5th of September, 1887, he practised the tibio-tarsal excision, preserving the external malleolus. Cure took place after slight suppuration. Now the patient is beginning to walk on his leg, the ulcer is cicatrized, the shortening measures $1\frac{1}{2}$ inches.

ON THE SURGICAL TREATMENT OF TUBERCULOSIS OF THE BLADDER.

DR. GUYON, of Paris, had tried the radical cure of vesical tuberculosis on the same ground that external local tuberculosis is treated. In two cases he has found the tubercle well situated for interference.

The first case was a man, aged twenty years, no gonorrhœa, who presented a very painful tuberculous cystitis; the urine contained a great many bacilli. He opened the bladder by abdominal section, then dilated the neck, and painted the parts with iodoformed oil. After seventeen days drainage, the patient was completely cured.

His second patient, a man aged forty years, who had

never had gonorrhœa, presented a tuberculosis limited to the bladder; the urine contained tubercle bacilli. The bladder was opened, the diseased parts curetted and cauterized with the hot iron. The patient was cured of his local tuberculosis, for no more bacilli appeared in his urine; a certain amount of cystitis remained, however. He preferred in these interventions the hypogastric method.

THE USE OF FORCEPS IN VAGINAL HYSTERECTOMY.

DR. DEMONS, of Bordeaux, thought that in post-operative hemorrhage the use of pressure forceps to stop the bleeding an excellent method, when the uterus cannot be drawn down; but when this organ can be pulled down, he preferred ligature. The danger of forceps lies in the fact that we may seize the ureter, which fact has happened on several occasions; even the anterior wall of the rectum may be caught. Moreover, the formation of a slough, the result of the use of these forceps, will postpone healing, whilst the ligature has not these objections.

As to the excision of the vagina, which is recommended by M. Richelot, it is a good precaution, but we must not make it too extensive, or we may wound the ureters; recurrence, of course, takes place more often in the broad ligaments.

DR. PÉAN, of Paris, drew attention to the fact that he had been the first to use pressure forceps in vaginal hysterectomies, having presented, in 1882, his observations before the Academy of Medicine. He said that no reference had been made to the important service rendered by temporary pressure; which, with two or more long forceps, straight and curved, permits the rapid detachment of the uterus without loss of blood. This allows us also, when the organ has been extracted, to pull down the broad ligaments, and when it is thought necessary to ligate them in halves, without difficulty or fear of hemorrhage. It will also permit us to omit the ligature, when we leave these forceps in place. Contrary to M. Demons, he thought that the forceps ought to be used especially in cases where the uterus can be easily drawn down.

DR. TERRIER, of Paris, had thought vaginal hysterectomy very difficult when he used ligatures, and now finds it very easy since the forceps have been used. He has made this operation 19 times, with 15 good results and 4 deaths, 1 being from hemorrhage in a case treated with ligatures. It gives, then, a mortality of 22 per cent. To appreciate the further results, we must not only separate the 4 cases of deaths, but also 4 cases in which the intervention was to have been temporary and palliative, but in which hysterectomy became necessary on account of opening the peritoneum; out of these incomplete cases, he had only 1 death; out of the other 11 cases, he had in 7 rapid return of the trouble; 3 other patients where tumors had been recognized microscopically as cancers, have remained cured for two years and nine months, one year and nine months, and one year; finally, in 1 case, he had to deal with an intra-cervical œdema, which did not return. These results represent 70 per cent. of rapid relapse, and 30 per cent. of cures which appear permanent. He concludes:

1st. That vaginal hysterectomy for cancer is a very serious operation, as it gives 22 per cent. of operative deaths.

2d. The operation appears more rational than partial amputations, although those are more easy and less dangerous primitively.

3d. Incomplete hysterectomy is not more grave, but is insufficient in all incomplete operations.

4th. Relapse occurs in 70 per cent. of cases; it is usually rapid.

5th. Cure is possible. He had found it in 30 per cent. of his observations where the diagnosis had been histologically verified.

DR. RICHELLOT, of Paris, said that when the uterus can be drawn down, the only way to prevent hemorrhage is to use the forceps; moreover, cure is not retarded by the use of these forceps; for having made an autopsy three days after an operation, he found a well-advanced cicatrization. As regards the ureter, the accident of seizing these canals has occurred with ligatures.

As to the supra-vaginal irregular amputation, he considers it as a very successful operation, as much so as curetting. As to the use of the pressure forceps, he thinks that it is to their use that we owe the increase in the number of vaginal hysterectomies.

INDICATIONS AND TECHNIQUE OF VAGINAL HYSTERECTOMIES FOR CANCER.

DR. POZZI, of Paris, said that vaginal hysterectomy can be applied to all cases in which supra- and infra-vaginal amputations of the neck of the uterus were performed. This operation is contraindicated in the following conditions:

1. Extension of the disease to the broad ligaments, shown by immobility of the organ and difficulty in lowering it after anæsthesia.

2. Primary and secondary extension to the vagina even when very limited.

3. Considerable volume of the cancerous uterus, rendering impossible or difficult its extirpation without tearing.

Palliative hysterectomy with or without excision of the vaginal cul-de-sac in all cases of this kind, must be disregarded. The dangers are out of proportion to the advantages it will procure. In all cases where a radical cure must not be attempted the palliative surgical treatment is of great service against hemorrhage, ichorous oozing, and pain. The operation consists in the methodical curetting of the diseased tissues followed by cauterizing with the red-hot iron.

The cutting curette is to be preferred, when well handled, to the knife. The red-hot iron will effectually complete the action of the curette. It can be carried without danger to the bottom of the uterus.

In cases of cancer of the neck and body, without extension, but too voluminous to be extracted per vaginam, the precedent palliative treatment (curetting with cauterization) should be preferred to total extirpation by abdominal section (Freund's operation).

4. The use of pressure forceps permanently does not give sufficient security against hemorrhage, especially primary. It exposes one to the compression and wounding of the neighboring organs and renders antiseptic precautions more difficult and the dressing more painful.

Pressure forceps are only to be used as a necessity and not as a method of choice, which is to be reserved for the ligature. These must be applied successively to the divided vaginal walls and on the broad ligaments, after

inversion of the uterus. In cases where the uterus alone is taken, and the organ is movable and easily depressed, ligatures offer no real difficulties. One could say that pressure forceps permanently applied are only necessary in a hysterectomy which ought not to have been undertaken.

ABDOMINAL HYSTERECTOMY FOR VOLUMINOUS FIBROMAS.

DR. TERRILLON, of Paris, said that during five years he had treated 76 women suffering from voluminous fibromata which could not be extirpated per vaginam; 16 have been operated on by abdominal hysterectomy, the section was made above the vagina. 6 were treated by Battey's operation for grave hemorrhages due to the presence of fibromas of a medium size. 6 died on account of the presence of a fibroid body in the uterus which gave rise to variable accidents. Finally, 48 have been treated by medical methods. Abdominal hysterectomies have been nearly all treated by a method which consists in fixing the pedicle outside. Two only have been treated by returning the pedicle in the abdomen. Out of the 14 cases treated by the external method, 6 pedicles were ligatured with iron wire, with a rubber tube. This last method cuts the pedicle more easily. These 16 hysterectomies gave him 5 deaths and 11 successes. Death was produced in 2 cases by shock, no traces of peritonitis or septicæmia; 1 peritonitis, 1 from grave hemorrhage during the operation, 1 from pyæmia on the seventeenth day. Out of the 6 cases of extirpation of the ovaries and Fallopian tubes 5 were absolutely cured, the hemorrhages having stopped; 1 died sixty days after the operation from intestinal obstruction, the hemorrhages had ceased. The 6 deaths due to the fibrous body are: 2 by hemorrhage, 2 by phlebitis, 2 by septicæmia. In the other 48 cases he has used ergotin, which gave good results in hemorrhages, but often failed, even increased hemorrhages when the uterine cavity was enlarged. Cannabis Indica stopped the pains and hemorrhages. Finally, salt baths have been useful in anæmia due to repeated hemorrhages.

CAVERNOUS LYMPHANGIOMA.

DR. CH. MONOD, of Paris, saw a girl, eight months old, who presented on one shoulder a tumor the size of a hen's egg, the clinical characters being those of a cyst with thickened walls. On extirpation it was found to be a circumscribed cavernous lymphangioma, that is, a tumor with multiple divisions lined by an endothelium similar to those lining lymphatic vessels and filled with a serous liquid. This example led him to think that we have probably often confused *lymphangiectomies* with *lymphangiomas*.

The usually accepted definition for sanguine angioma is that it is a tumor constituted in great part by vessels of new formation (Cornil and Ranvier). Applying this definition to lymphangioma, he thinks we ought to reserve this last designation for tumors of lymphatic origin, in which one can admit and demonstrate the new formation of vessels and lymphatic laminae.

To apply the name of lymphangioma to simple lymphatic dilatation would be exactly similar to giving the name of angioma to dilations of the veins (varicose veins) or arteries (aneurism), which no one would accept. The lymphangioma, so accepted, is a very rare

tumor, he had only found two cases in medical literature which are like his, one by Reichel and the other by Middeldorpf. The only treatment for these tumors is extirpation and it is without danger.

URETHRECTOMY IN CERTAIN STRICTURES.

DR. PONCET, of Lyons, said that the excision of a portion of the urethra, followed by the union of the two divided ends, is a good operation which finds its indication in peri-urethral fibrous induration encircling the urethra with an indurated perineal mass. Out of nine patients on whom he operated he had no death nor grave accidents; in three cases he obtained union by first intention.

After several months the result was perfect; a No. 20 bougie could be easily passed. In the six remaining cases the union took place more slowly, and the patients remained a few weeks in the hospital. The final result of this operation is superior to that of external urethrotomy, especially when union takes place by first intention. The calibre of the canal remains normal, and a few months after the operation it is difficult to find the former seat of the stricture. If union by first intention does not take place on account of the extent of the stricture, or for any other cause, a new canal will be formed by granulation. The cure, however, will necessitate several weeks, and if one wants to maintain a sufficient calibre to the urethral portion of new formation, daily catheterization must be practised, which the patient must do himself.

Micturition and coitus take place without interference; such has been the case in five of his patients whom he had seen several months after the operation.

SURGICAL TREATMENT OF HEPATIC CYSTS.

DR. SEGOND, of Paris, said that there are two ways to reach infra-diaphragmatic hepatic cysts: the abdominal method; the pleural one. The abdominal method necessitates a tilting forward of the entire liver, and fixing it by approximate sutures in this new position. The pleural method, more direct, necessitates the successive incision of the thoracic wall, the pleural cul-de-sac, and finally the diaphragm. He has had satisfactory results in two cases on which he operated by the pleural method, incision of the thoracic wall, with or without costal excision. The first one was complicated by vomica and pulmonary suppuration, the other, more simple, and without connection with the lung. He concludes that transpleural incision, with costal excision, is the method of choice for posterior infra-diaphragmatic cysts. The dangers are less, he thinks, than when the anterior incision is performed and traction on the liver is made.

OPENING HYDATID CYSTS OF THE LIVER BY THE PLEURAL METHOD.

DR. MAUNOURY, of Chartres, reported the case of a man of twenty-nine, who had an hydatid suppurating cyst of the upper surface of the liver, giving rise to very severe symptoms; being unable to reach this part by the anterior abdominal section, he opened it at the eighth intercostal space, which was the most projecting; on this level there existed, in the pleura and peritoneum, adhesions which appeared very solid. Two days later the pleural adhesions were destroyed, the contents of the cyst entered the pleura, and the patient died.

A few months ago, having to treat a woman, aged thirty-four years, presenting a similar cyst, he operated

differently. He opened, at the most projecting point, the tenth intercostal space, and incised the parietal pleura through the diaphragmatic pleura. He sutured them together, so as to produce a complete canal through the serous membrane, then finished by incising the diaphragm, exposed the cyst, punctured it, and finally brought it to the exterior, fixing it on each side to the skin. No accidents occurred, and the patient is now perfectly well.

SUTURE OF THE INTESTINE FOR A CÆCAL FISTULA.

DR. HORTELOUP, of Paris, reported the case of a woman who had had a perityphlitis; an abscess followed, which terminated in the formation of a large cæcal fistula, being four inches long and two broad. He tried on two occasions to remedy the trouble by sutures, but failed; he then resorted to the following operation: he made a circular incision between the mucous membrane and the cicatricial tissue; detached completely the intestine from the abdominal walls, and applied nine isolated sutures of carbolized silk, to close the abnormal opening; then, before uniting the abdominal wound, he washed the intestinal wound and the peritoneal cavity with boiled water, then finally applied isolated sutures to the abdominal parietes. The next day he gave his patient a purgative enema and the patient had regular evacuations, the sutures held firmly. Thirty-six hours later he gave him castor oil. He insists on two points of this operation:

1. The sutures he employed he prefers to Lembert's suture, as they require much less tissue than the latter.
2. The early administration of laxatives.

This last fact is contrary to accepted rules, but he claims that by keeping the intestines quiet with opium, the formation of gases is favored, which often brings on a condition of meteorism which tears the sutures and gives bad results; while laxatives prevent intestinal inertia which is due to a reflex state, and the intestine is much more easily restored to a normal and physiological condition.

NEWS ITEMS.

Mortality among Physicians.—The Illinois State Board of Health, in its *Report* of April 20, 1888, publishes the following conclusions from tabulated reports of death and disease among physicians:

The obvious inference is that physicians on entering practice form a class of selected lives, since they have an advantage of nearly 3 per cent. as compared with all males at the same ages—that is from twenty-four to forty; and of over 50 per cent. as compared with the total population, both sexes, at the same ages, this latter great disparity being no doubt largely due to the casualties among women during the childbearing period.

As the wear and tear of practice begins to tell, this advantage is soon lost, so that during the period from thirty to seventy the death-rate of physicians is 8 per cent. greater than that of all males, and during the period from forty to seventy it is more than 11 per cent. greater than that of both sexes.

The Pollution of Ice.—The Massachusetts State Board of Health has been investigating the purity of the ice supply of Boston and vicinity. A recent number of the *Boston Herald*, in publishing a report of the work done

by the Board, describes the following example of the dangers of impure ice, occurring at a hotel at Rye Beach:

The Rye Beach trouble was ably reported upon by Dr. A. H. Nichols. He was engaged by the proprietors of the hotel, who were, of course, suffering peculiarly from the trouble, to investigate it thoroughly. The disorder in question may be comprehended under the general term disturbance of the digestive system, characterized by a sensation of giddiness and nausea, vomiting, diarrhoea, severe abdominal pains, all of which was accompanied by fever, loss of appetite, continued indigestion, and mental depression. The epidemic, though confined to so limited boundaries, baffled for a considerable time all efforts to trace the trouble to any specific cause. At first the drinking water was suspected, but that was drawn from wells at a safe distance from all drains and contaminations. It was also ascertained that some of the persons affected, having apprehended trouble from some such source, had used some other beverage. They had not hesitated, however, to use ice, either melted or otherwise. Suspicion at length rested upon the supply of ice furnished the house. A large portion of the ice furnished the town was found to be gathered from shallow ponds, formed during the winter by the flooding of meadows, and it, therefore, contained, as a rule, more or less grass and old vegetable matter, being, consequently, far less transparent than the ice supplied in Boston.

The ice in this case was found to contain numerous foreign substances, varying in size, and apparently of vegetable origin, and the blocks were opaque. By questioning residents of the place, it was found that, during the winter, one had taken home some of the ice for the purpose of testing it, to find out whether it was fit to use, and, having eaten some of it, was made violently ill. Others had noticed a disagreeable odor arising from it. Two gentlemen who had taken some of it on a fishing excursion were made ill by using it, and in the room in which the ice was stored for the hotel there was a very bad smell. When the water from the melted ice was poured into a glass in the sunlight there was seen to be a discoloration, and it was charged with suspended matter. The pond itself was then examined, and was found to be stagnant, while down at one end of it there was a homogeneous mass of putrescent matter, composed of marsh mud and decomposing sawdust. When stirred the water near this place emitted an intolerably offensive odor. At houses near by it was found that in the summer time the windows had to be closed when the water was in any way disturbed, on account of the smell it gave off. Prof. W. R. Nichols was asked to examine samples of the water, and reported that it contained in suspension a considerable quantity of vegetable matter more or less decayed, and possessed a slightly disagreeable odor which became more noticeable as the water was warmed. Of the organic matter, some was so heavy as to settle down at once into the bottom of the vessel into which it was poured, but the lighter material remained for an indefinite time diffused through the water and would be drunk by anyone using the ice in the ordinary way. Prof. Nichols thought that it was quite reasonable to suppose that the ice had been the cause of the sickness.

Coincident with the disuse of ice at the hotel the guests began to get well, and there was no further sickness.

Ice taken from a cart of the Boston Ice Company was

analyzed beside that taken from Rye Beach, and the result showed that, while the organic and volatile matter was 0.31 in the Boston ice, it was 5.72 in the Rye Beach ice; and, while the chlorine was 0.02 in the Boston ice, it was 3.23 in that from Rye Beach. Dr. Nichols is constrained to say that great responsibility devolves upon those who undertake to provide food and drink for large numbers of individuals, and to such this experience inculcates the importance of giving special attention to the purity of drinking water, and guarding against every possible source of contamination. The notion that ice purifies itself by the process of freezing is not based upon trustworthy scientific observation. On the contrary, it is utterly wrong in principle to take ice for consumption from any pond, the water of which is so fouled that it is unfit for drinking purposes.

The Dangers of Carpet Beating.—The Paris correspondent of the *Popular Science News* writes that the Conseil de Salubrité of Paris has recently discovered the inconvenience of allowing carpets to be brushed and beaten in the open air in the vicinity of inhabited houses, on account of the dust which is so raised, and especially on account of the bacteria which may be set free when the carpets come from houses where zymotic diseases have existed. The Conseil de Salubrité has decided that this operation will be allowed only under the following conditions: The carpets must be brushed and beaten in entirely shut-up rooms, and the dust deposited on the floor will be washed with water containing some disinfectant of potent action; strips of wool, etc., will be burnt immediately. This measure is a good one, and will certainly prove useful. Sources of contamination are much too numerous to be allowed to remain, when we possess means of destroying them.

Typhoid Contagion by Clothing.—The Berlin correspondent of the *Medical Press* of March 28, 1888, writes that many striking illustrations of the origin and spread of typhoid fever epidemics are on record, but not many are more instructive than the history of a persistent epidemic that played havoc in a German artillery barracks during more than a decennium, from 1873 to 1885. Two neighboring barracks were occupied by the 1st Division of the 2d Hanoverian Field Artillery Regiment, No. 26, and in the year 1873 a case of typhoid was imported, probably, as is supposed, on the return from France of the army of occupation, and from that date to the close of the epidemic 146 cases of fever occurred. Almost the whole of the cases occurred in one of the barracks, in which 238 men found accommodation, although the drinking water of both was from a common source. Every attention was paid, every inquiry was made into possible sources of disease, the latrines, water, buildings, everything was put and kept in the best possible condition, but the disease still baffled all inquiry. At last, the question of the propriety of closing the barracks came up for consideration, when, in 1883, the observation was made that about one-half of the cases were furnished by the men of one battery alone, and suspicion fell upon the bed linen and clothing. It was then ascertained that three of the recent cases had used the clothing and bedding of men that had been attacked. This led to closer examination of the clothing, and it was then discovered that the linings of the trousers were almost, without exception, soiled by

dried fecal matter, of which a part probably had its origin in typhoid patients. The clothing had previously gone through a routine of disinfection by sulphur vapor, but as the result showed the disinfection had been nil. It was now submitted to more careful treatment and thorough cleansing, twelve hours saturation with chlorine gas, and lastly, dry heat for several hours more. From this time, November 18, 1885, no more cases of disease occurred.

Benzine an Adulteration of Antipyrin.—Dujardin-Beaumont calls attention to recent analyses of antipyrin as commonly sold, which showed benzine to be present not rarely as an adulteration. Some of the ill effects reported may be thus accounted for.

Lipanine, a Substitute for Cod-liver Oil.—The *Revue Scientifique* writes that cod-liver oil is in certain cases so wonderful a medicine, that we must regret that we do not know its active constituents with exactness, so as to be able to administer them in a form less repugnant than that of the oil itself. M. Mering has performed an experiment in this line that should be noted.

Starting from the theory, adopted by most doctors and pharmacologists, that cod-liver oil owes its superiority over other fatty oils to its richness in oleic acid—white oil contains from 0.18 per cent. to 0.71 per cent., and brown oil 2.54 per cent. to 5.07 per cent.—the author has tried experiments with a mixture of olive oil (100 parts) and oleic acid (6 parts), to which he has given the name of lipanine, and to which he attributes the following advantages:

Lipanine would have no disagreeable taste and would be perfectly digestible, because of its high emulsive power, oleic acid saponifying with the alkalies of the bile and pancreatic juice. For this reason it could be administered for long periods in large doses without injury to the digestive faculties. In fact, M. Mering reports that for a period of six months he administered this remedy to forty patients, of whom thirty were children, and that all took it without repugnance and without subsequent ill effects. The dose varied from one to four teaspoonfuls, according to the patient's age, and this was continued from six weeks to three months. Most of the patients were scrofulous or rickety, some consumptives or diabetics. All of them under this treatment increased in weight, their general condition improved, their strength returned, and these good results were obtained also among a great number of children in charge of Professor Kohts. In a word, these effects would appear absolutely comparable with those obtained with cod-liver oil, but the advantages of lipanine in its freedom from taste, easy toleration by the stomach, and capability of administration in the hottest summer weather are equally obvious.

A Tribute to the Late Dr. Cornelius R. Agnew.—The following communication to the *New York Evening Post* of recent date evidences his work among the soldiers during the War of the Rebellion:

To the Editor of the Evening Post,

SIR: Permit me to place one flower on the grave of Dr. C. R. Agnew, in grateful remembrance of his kindness to soldiers during the late war.

I was severely injured in the eye while fencing with a brother officer at the headquarters of the Army of the Potomac. Gen. Meade's Surgeon-General advised that

I should at once be sent to Dr. Agnew in New York, and this was done. For thirty days Dr. Agnew's care was bestowed upon me with marvellous skill and the tenderness of a loving parent. At the end of that time I was able to return to duty, when, upon asking the doctor for his bill, he laid his hand on my shoulder and looked into my eyes and said: "Captain, what I have done for you is only an expression of what I feel is due to every man who wears your uniform. You do not owe me anything."

On my way back to the army I met a captain of artillery whose hearing had been injured by the bursting of a shell near his head. We had met often at Dr. Agnew's office, and, on comparing notes, each learned of the doctor's generous kindness to the other.

Only a few people know of Dr. Agnew's devotion to the men of the army. To me, "The world seems lonely without him."

Respectfully yours,
AN EX-OFFICER OF THE U. S. ARMY.

CORRIGENDUM.

THE interesting article entitled, "A Case of Symmetrical Gangrene," which appeared in our issue of last week, page 461, should have been credited to Dr. M. A. Veeder, not "Beader" as printed.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING APRIL 28, 1888.

RHOADES, A. C., *Medical Inspector*.—Detached from special duty, New York, and waiting orders.

HENNEBERGER, L. G., *Passed Assistant Surgeon*.—Detached from Naval Hospital, New York, and to special duty attending officers and families New York.

OBBERLY, A. S., *Medical Inspector*.—Granted six months leave with permission to visit Europe.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM APRIL 24 TO APRIL 30, 1888.

BAILY, JOSEPH C., *Lieutenant-Colonel and Assistant Medical Purveyor*.—Granted leave of absence for twenty days on surgeon's certificate of disability, with permission to apply for an extension.—*S. O. 92, A. G. O., April 21, 1888.*

BAILY, JOSEPH C., *Lieutenant-Colonel and Assistant Medical Purveyor*.—Will transfer the public funds, for which he is responsible, and the charge of the Medical Purveying Depot in New York City, temporarily, to Captain Henry Johnson, Medical Storekeeper.—*S. O. 92, A. G. O., April 21, 1888.*

Par. 13, *S. O. 89, A. G. O., April 18*, is revoked by par. 1, *S. O. 93, A. G. O., April 23*, and STERNBERG, GEORGE M., *Major and Surgeon, U. S. Army*, is directed to proceed to the Island of Cuba for the purpose named in the letter of the President addressed to the Secretary of War on the 17th inst. Upon the completion of this duty will return to his proper station, and submit his report to the President on or before June 25, 1888.

VICKERY, R. S., *Major and Surgeon*.—Granted leave of absence for four months, with permission to apply for an extension of two months and to go beyond sea.—*S. O. 95, A. G. O., April 25, 1888.*

By direction of the President, PERSONS, REMUS C., *Surgeon, U. S. Army*, is assigned, temporarily, to the charge of the Army and Navy General Hospital, Hot Springs, Arkansas, during the absence, on leave, of Major Richard S. Vickery, *Surgeon, U. S. Army*, Surgeon in charge.—*S. O. 96, A. G. O., April 26, 1888.*

WOOD, LEONARD, *First Lieutenant and Assistant Surgeon*.—Granted one month's leave of absence, with permission for an extension of two months.—*S. O. 41, Department of Arizona, April 18, 1888.*

ANDERSON, CHARLES L. G., *First Lieutenant and Assistant Surgeon*.—Granted one month's leave of absence, from June 1, 1888. Resignation accepted by the President, to take effect July 1, 1888.—*S. O. 92, A. G. O., April 21, 1888.*